

Model Clauses for Archaeological Written Schemes of Investigation

Offshore Renewables Projects



December 2010



Wessex Archaeology

THE CROWN
ESTATE

Model Clauses for Archaeological Written Schemes of Investigation

Offshore Renewables Projects



Prepared on behalf of



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 Wessex Archaeology

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1 INTRODUCTION

1.1 Background

The Crown Estate recognises the importance of dealing with the historic environment where it may be affected by offshore renewables and their associated infrastructure. In the course of developing applications, the archaeological heritage has to be addressed through the process of Environmental Impact Assessment (EIA), to include the identification of mitigation measures where significant effects are anticipated.

In terrestrial planning, mitigation measures have historically been secured through conditions requiring the implementation of a Written Scheme of Investigation (WSI). The use of WSIs in this way has transferred successfully to the marine sphere and, in recent years, WSIs have become a common means of securing archaeological mitigation for marine development.

The draft National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3; November 2009) applicable to England & Wales states (p. 44) that:

It is likely to be necessary for the [Regulator] to impose conditions requiring that ... the following [is] undertaken:

a Written Scheme of Investigation (WSI). This sets out when, how and why archaeological mitigation measures recommended in the ES are to be implemented. It should include necessary monitoring of the effects of the development during the construction, operational and decommissioning phases of the scheme.

Whilst formal guidance equivalent to EN-3 has yet to emerge in Scotland and Northern Ireland, it is likely that conditions requiring implementation of a WSI will also apply.

In *Historic Environment Guidance for the Offshore Renewable Energy Sector* (Cowrie 2007) Cowrie set out the following guidance with respect to WSIs (para 11.2.1-2):

The design and implementation of mitigation measures should be informed by best archaeological practice and is likely to take the form of a Written

Scheme of Investigation, which is a document that can be used to explain when, how and why mitigation measures recommended in the ES are to be implemented for any given scheme. In designing mitigation measures, reference should be made to the opinions provided by curators during scoping. It is advisable to discuss the content of a WSI with the relevant curators in the course of its preparation.

The objectives of a WSI are to:

- *Set out the respective responsibilities of the Developer, main contractors, and archaeological contractors/consultants, to include contact details and formal lines of communication between the parties and with archaeological Curators;*
- *Ensure that any further geophysical and geotechnical investigations associated with the project are subject to archaeological input, review, recording and sampling;*
- *Provide for archaeological involvement in any diver and/or ROV obstruction surveys conducted for the scheme;*
- *Establish the exact position and extent of archaeological exclusion zones, and methodologies for their monitoring, modification and/or removal;*
- *Propose measures for mitigating effects upon any archaeological material encountered during the operation and decommissioning of the scheme; and*
- *Establish the reporting, publication, conservation and archiving requirements for the archaeological works undertaken in the course of the scheme.*

WSIs provide details of the archaeological actions required by consent, avoiding the need to include such detail within the consent itself. WSIs are commonly used in land-based archaeology, invoked by conditions on planning consents, and they have found increasing use in consenting offshore renewables and other marine schemes. As they are 'living documents' that can be reviewed and revised through agreement between Developer and Regulator, they are especially suitable for adapting archaeological measures to reflect the results of new data or surveys.

Broadly, marine WSIs comprise:

- a) an outline of the known and potential receptors implicated by the scheme;
- b) roles and responsibilities;
- c) an account of the archaeological actions that are to take place in various circumstances; and
- d) detailed methodologies for these archaeological actions.

Whilst items (a) to (c) are scheme-specific and have to be prepared accordingly, archaeological methodologies, item (d), are relatively generic. The Model Clauses in this document set out agreed archaeological methodologies so that they do not have to form part of the preparation and agreement of each WSI. This is expected to save time and costs both in preparing each WSI and in obtaining agreement to them.

Insofar as the Model Clauses are agreed in advance, then the WSIs can focus on items (a) to (c) above and to be tailored to specific aspects of the respective development.

It is likely that the scheme-specific WSI will form part of, or cross refer to, the overarching Environmental Management Systems applicable to the scheme. These Model Clauses may be used in such Environmental Management Systems.

This document is intended to help meet requirements placed on Developers with respect to the historic environment. The aims of the Model Clauses are:

- to facilitate the consenting process, including zonal assessment, EIA, discussions about conditions, and determination. Common agreement of methodologies in advance provides increased certainty about the detail of mitigation actions and promotes greater confidence in determining the residual effects of impacts 'with mitigation';
- to inform the preparation of an Environmental Statement during pre-consent survey, or to be used during survey conducted at later stages (post-consent) to inform detailed project delivery;

- to be used both pre- and post-consent to ensure that Developers are fully aware of the mitigation processes required, whilst ensuring that Archaeological Contractors are clear about the standard requirements of the industry;
- to provide greater certainty for Developers so that they know what to accommodate in their post-consent plans for site investigations and construction;
- to encourage an open and level playing field for the provision of archaeological services by contractors.

Scheme-specific WSIs may refer to the Model Clauses in this document without needing to repeat them in the WSI. Where a scheme-specific WSI deviates from these Model Clauses due to the circumstances of the scheme, the rationale for such deviation must be clearly stated in the WSI, which will be subject to the approval of the Regulator and their archaeological advisors.

The Model Clauses draw upon a corpus of practical experience in developing and agreeing methodological clauses WSI-by-WSI in the course of Round 1 and Round 2 offshore windfarm development, and in the course of other forms of marine development such as ports and aggregates.

The Model Clauses have been written to apply, as relevant, to archaeological investigations on land, intertidal areas and at sea, due to the breadth of impacts from offshore developments.

It should be noted that Regulator or its advisors will want to satisfy themselves that the competence of archaeological contractors implementing WSIs has been sufficiently demonstrated. Competence is indicated by membership of the Institute for Archaeologists (IfA) at the appropriate grade, or registration with the Institute as an organisation holding itself out as capable of carrying out the work in question. In any other case individuals must be able to demonstrate competence to an equivalent standard.

1.2 Roles and Responsibilities

The following table details the roles and responsibilities of the organisations involved. The main roles and responsibilities in relation to the historic environment will be as follows:

Organisation	Term used in document	Responsibility
Offshore Renewable Energy Developers	<i>Developer</i>	Developers involved in Offshore Renewable Energy Schemes will be commissioning EIAs and WSIs at strategic points in the planning process
Regulatory Bodies (MIPU, MMO etc.)	<i>Regulator</i>	Overall responsibility for protection of the historic environment
National Curatorial Body (EH, HS, Cadw etc.)	<i>Archaeological Curators</i>	Provide guidance and advice to the regulator pre- and post-consent
Local Curatorial Body (Local Planning Authority)	<i>Archaeological Curators</i>	Provides local authority advice to the Regulator
The Crown Estate	<i>TCE</i>	Ownership/Management of the Seabed, Commissioning body, 'land' owner
Archaeologists	<i>Retained Archaeologist (RA)</i>	The Archaeological Contractor appointed by the Developer to act as their retained archaeologist
Archaeologists	<i>Archaeological Contractor</i>	Archaeological Contractor appointed by the Developer to carry out specific packages of archaeological work
Sub-Contractors	<i>Contractor</i>	Contractors and Sub-contractors appointed by the Developer to deliver aspects of the scheme

1.3 Scope of the Model Clauses

Seven sets of Model Clauses are included in this document for the following methodologies:

Chapter	Title	Contents
2	<i>Archaeological Recording, Reporting, Data Management and Archiving</i>	Clauses covering basic requirements common to all archaeological activities
3	<i>Archaeological Samples and Artefacts</i>	Generic requirements for handling, labelling, packaging and storing samples and artefacts, to include reference to legal and other requirements in respect of wreck, aircraft, human remains, ordnance
4	<i>Archaeological Exclusion Zones</i>	Standard clauses on the design and monitoring of exclusion zones, including review and modification in light of additional data
5	<i>Marine Geophysical Investigations</i>	Where geophysical surveys are to include archaeological objectives, clauses on survey planning, acquisition procedures, processing and archaeological interpretation
6	<i>Marine Geoarchaeological Investigations</i>	Covering archaeological involvement in planning geotechnical surveys such as vibrocoring and boreholes, on site recording and sampling, assessment of logs, laboratory recording and sub-sampling, sample assessment, scientific dating, analysis and reporting
7	<i>Archaeological Investigations using Divers and/or ROVs</i>	Clauses on the conduct of underwater interventions, including position-fixing
8	<i>Archaeological Watching Briefs</i>	Clauses covering circumstances where archaeologists may be required to be present during construction activities, such as pre-lay grapnel runs and intertidal cable-laying.

A list of sources of guidance and further reading can be found in Chapter 9.

2 ARCHAEOLOGICAL RECORDING, REPORTING, DATA MANAGEMENT AND ARCHIVING

2.1 Archaeological Method Statements

2.1.1 Each package of archaeological works will be subject to a Method Statement that is consistent with the scheme-specific WSI and these Model Clauses. Method Statements will be prepared for the Developer either by the Retained Archaeologist or by Archaeological Contractors monitored by the Retained Archaeologist on behalf of the Developer.

2.1.2 The Developer will submit each Method Statement (including generic and specific Method Statements, and varied and updated Method Statements) to Archaeological Curators in advance of the archaeological works, and in accordance with the time frame agreed between the Developer and Archaeological Curators in the scheme-specific WSI.

2.1.3 The Archaeological Curators will confirm that they have agreed each Method Statement in accordance with the time frame agreed between the Developer and Archaeological Curators in the scheme-specific WSI.

2.1.4 Archaeological works will not commence unless the Archaeological Curators have confirmed their agreement of the Method Statement, or if the time frame agreed in the scheme-specific WSI has elapsed.

2.1.5 Method Statements will include provision for Archaeological Curators to monitor the conduct of the archaeological work as appropriate, including site visits, interim statements and/or meetings with the Developer, the Retained Archaeologist and the Archaeological Contractor.

2.1.6 Unless otherwise agreed by the Developer and the Archaeological Curators, Method Statements will address the following matters:

- form of commission and contractual relationship with the Developer;
- relation between licence condition(s), WSI and the Method Statement;
- context in terms of relevant construction works;
- summary results of previous archaeological investigations in the vicinity;

- archaeological potential;
- specific objectives of archaeological works;
- extent of investigation;
- investigation methodology, to cover:
 - intrusive methods;
 - recording system;
 - finds, including the policy for selection, retention and disposal and provision for immediate conservation and storage;
 - environmental sampling strategy;
- anticipated post-investigation actions, including processing, assessment and analysis of finds and samples;
- reporting, including Intellectual Property Rights in the report and associated data, confidentiality and timescale for deposition of the report in a publicly accessible archive;
- timetable, to include investigation and post-investigation actions;
- monitoring arrangements, including monitoring by Archaeological Curators;
- health, safety and welfare.

2.1.7 Method Statements may refer directly to these Model Clauses as appropriate and need not repeat them.

2.2 Indexing and Recording Systems

2.2.1 All archaeological recording will be based on a series of unique site identifiers that are cross-referenced to the identifiers used in pre-consent investigations (e.g. zone assessment/EIA).

2.2.2 All archaeological finds and deposits will be recorded using a *pro forma* recording system, based on a running matrix of assigned contexts for each site. Numbers will be allocated in blocks that are unique to that site. A number log will be maintained.

2.2.3 All archaeological finds and deposits will be added, as appropriate, to a Geographic Information System (GIS) maintained by the Retained Archaeologist. Summary details and archaeological constraints (including Archaeological Exclusion Zones (AEZs)) will also be added to the scheme GIS maintained by the Developer.

2.2.4 A full photographic record will be maintained using digital, video and stills photography as appropriate. Recovered material will be subject to photographic recording by digital stills, monochrome prints and colour transparencies as appropriate. Additional illustrative photographs will be taken as appropriate and a register of the photographic record will be maintained.

2.3 Data Management

2.3.1 All data in digital formats will be considered part of the primary archive and will be prepared in accordance with the guidance in *Digital Archives from Excavation and Fieldwork: Guide to Good Practice* (AHDS, 2000).

2.3.2 All data will be stored on a suitable safe medium and protected from accidental or deliberate harm.

2.3.3 Provisions for digital data will accord with procedures recommended by The Crown Estate (TCE), Marine Environment Data and Information Network (MEDIN), Archaeology Data Service (ADS) and the relevant Archaeological Curators. Digital material will be subject to managed quality control and curation processes which will embed appropriate metadata within the material and ensure its long term accessibility.

2.3.4 Summary data will be compiled in a format suitable for submission of Monument, Event and Source records to the relevant National Monument Record and Local Historic Environment Record (HER).

2.3.5 Survey data relating to wrecks should be submitted to UKHO using form H525.

2.3.6 On completion of scheme construction (in England and Scotland), an OASIS form will be produced for the whole scheme, and copies of all archaeological reports will be attached as data files. Notification of the completion of the OASIS form will be sent to relevant local HERs, and the English Heritage Marine Planning Unit to enable compliance with any relevant consent.

2.4 Position-Fixing and Levelling

2.4.1 The spot height of all principal features and levels will be calculated in metres relative to Ordnance Datum, correct to two decimal places. Plans, sections and elevations will be annotated with spot heights as appropriate.

2.4.2 Levels of principal features and of the seabed/land surface will also be converted to metres relative to Chart Datum.

2.4.3 Position-fixing will be related to UTM WGS 84 datum in offshore use and British National Grid (BNG) in

intertidal and terrestrial uses. Where positions have been acquired in another projection, details of the position in its original projection will be maintained including an audit trail for the conversion to BNG or WGS 84.

2.4.4 Position-fixing will be by GPS, either by hand-held unit (on land or intertidal areas); by reference to vessel navigation systems; or by dedicated survey equipment.

2.4.5 On land and in intertidal areas, levels will be obtained by Total Station or by RTK (Real Time Kinematic) GPS.

2.4.6 Position-fixing during diver or ROV-based investigations will be determined by acoustic tracking system linked to GPS.

2.4.7 The methods and likely accuracy of position-fixing and levelling will be stated in Archaeological Reports.

2.5 Reports

2.5.1 Each package of work outlined in the scheme-specific WSI will give rise to one or more Archaeological Reports, as set out in the Method Statement relating to the work.

2.5.2 Each Archaeological Report will satisfy the Method Statement for the investigation and will present the project information in sufficient detail to allow interpretation without recourse to the project archive.

2.5.3 Archaeological reports will be prepared in accordance with the guidance given in the relevant IfA's Standards and Guidance documents. Reports will typically include:

- a non-technical summary;
- the aims and methods of the work;
- the results of the work including finds and environmental remains;
- a statement of the potential of the results;
- proposals for further analysis and publication; and
- illustrations and appendices to support the report.

2.5.4 Illustrations will include a plan of the area subject to investigation in relation to the development scheme.

2.5.5 Each Archaeological Report will be submitted in draft to the Retained Archaeologist for submission to the Developer. If the report is prepared by the Retained Archaeologist it will be submitted directly to the Developer.

2.5.6 Arrangements and timescales for submitting draft Archaeological Reports by the Developer to Archaeological Curators will be set out in the scheme-specific WSI.

2.5.7 Where comments are received from the Archaeological Curators, Archaeological Reports will be returned by the Developer to the report originator to undertake such amendments as might be required.

2.5.8 Arrangements and timescales for submitting final Archaeological Reports by the Developer to Archaeological Curators will be set out in the scheme-specific WSI.

2.5.9 On completion of archaeological works relating to construction of the scheme and to a timetable agreed with the Developer and Archaeological Curators, an overarching report on the archaeology of the scheme will be prepared in draft and final copies in accordance with the methods set out above. The overarching report need not repeat the details contained in each preceding report, but should serve as an index to, and summary of, the archaeological investigations as a whole.

2.5.10 Draft and final Archaeological Reports may be submitted in pdf format. Final Archaeological Reports must also be submitted in hard copy: one copy for the Retained Archaeologist; two copies for the Developer; and a further three copies for forwarding to Archaeological Curators (including relevant National Monument Records and Local Historic Environment Records).

2.5.11 Full copyright of each report shall be retained by the originator under the Copyright, Designs and Patents Act 1988 with all rights reserved, excepting that:

- the Developer will be licensed to use each report in all matters directly relating to the scheme;
- the Developer will be licensed to make each report available for public dissemination as part of the dissemination measures; and
- at an appropriate time, the Developer will submit the reports to the appropriate National repositories with full usage rights to make accessioned material publicly available as part of their normal functions.

2.5.12 Except where further analysis and publication are to take place (see below), a note based on the overarching report should be published in at least one appropriate peer-reviewed local, national, thematic or period-based journal. The note will signpost the availability of further details of the investigations, including reports, records and archives.

2.6 Post-Fieldwork Assessment

2.6.1 Post-fieldwork assessment will address, where possible, the character and extent, date, integrity, state of preservation and relative quality of the archaeological features or remains of the recorded archaeology, and

provide a costing for any further research, analysis, publication and archiving (including the costs of depositing the archive).

2.6.2 Decisions regarding the scope of post-fieldwork assessment will be made by agreement between the Developer and Archaeological Curators following submission of investigation reports, based on the possible importance of the results in terms of their contribution to archaeological knowledge, understanding or methodological development.

2.6.3 As a minimum, a single post-fieldwork assessment may be carried out in respect of the investigations associated with the scheme as a whole. Such an assessment may be carried out by expanding the overarching archaeological report to include proposals in respect of analysis, publication and archiving.

2.6.4 An assessment of the potential of the archive for further analysis will be undertaken. The assessment phase may include (but is not limited to) the following elements:

- the conservation of appropriate materials, including the X-raying of metalwork;
- the spot-dating of all pottery from any investigation. This will be corroborated by the scanning of other categories of material;
- the preparation of Site matrices with supporting lists of contexts by type, by spot-dated phase and by structural grouping supported by appropriate scaled plans;
- an assessment statement will be prepared for each category of material, including reference to quantity, provenance, range and variety, condition and existence of other primary sources;
- a statement of potential for each material category and for the data set as a whole will be prepared, including specific questions that can be answered and the potential value of the data to local, regional and national investigation priorities.

2.6.5 Where warranted by – for example – the investigation of an important site, a discrete post-fieldwork assessment may be undertaken of the specific sites or investigations in advance of assessment of the investigations associated with the scheme as a whole.

2.6.6 Post-fieldwork assessment reports will be prepared in a manner consistent with the Model Clauses on reporting above.

2.7 Analysis and Publication

2.7.1 On the basis of post-fieldwork assessment, and as agreed by the relevant local or national Archaeological Curators, mitigation requirements will be satisfied by

carrying out analysis of the post-fieldwork assessment to include publication of important results in a recognised peer-reviewed journal or as a monograph.

2.7.2 Other forms of publication (e.g. ‘popular publication’, internet publishing, and publication of photographs, videos etc. on digital media or online) may be employed where appropriate. The scope of any such publication will be informed by the post-fieldwork assessment and subject to agreement between the Developer and the relevant Archaeological Curators.

2.8 Archiving

2.8.1 It is accepted practice to keep project archives, including written, drawn, photographic and artefactual elements (together with a summary of the contents of the archive) together wherever possible and to deposit them in appropriate receiving institutions once their contents are in the public domain.

2.8.2 Best practice should be adhered to in line with Archaeology Archives Forum, *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (2007) and IfA, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives* (2009).

2.8.3 Where appropriate, reference should also be made to: Museums and Galleries Commission, *Standards in the Museum Care of Archaeological Collections* (1992); Society of Museum Archaeologists, *Retention and Dispersal of Archaeological Collections; Guidelines for use in England, Wales and Northern Ireland* (1993); Institute for Conservation (ICON), *Conservation Guidelines No. 3: environmental standards for the permanent storage of excavated material from archaeological sites* (1993) and; Walker, K., *Guidelines for the preparation of excavation archives for long-term storage* (1990).

2.8.4 The relevant receiving institution will be notified of any archaeological investigation in advance of fieldwork. Any specific requirements relating to the preparation and deposition of project archives raised by archaeological contractors will be accommodated as appropriate. The Archaeological Contractor, through the Developer, will inform the Archaeological Curators of arrangements for archiving.

2.8.5 In the course of developing Method Statements for archaeological investigations that are likely to result in artefacts etc. being added to the project archive, the Archaeological Contractor will contact an appropriate receiving institution to discuss the intended fieldwork

and seek their agreement to accept the project archive for long-term storage and curation. An Accession Number will be sought for the project archive.

2.8.6 The relevant Archaeological Curators and the Archaeological Contractor will agree with the receiving institution a policy for the selection, retention and disposal of excavated material, and confirm requirements in respect of the format, presentation and packaging of archive records and materials, and will notify the receiving institution in advance of any fieldwork.

2.8.7 Written archives will be on clean, stable materials, and will be suitable for photocopying. The materials used will be of the standard recommended in *Guidelines for the Preparation of Excavation Archives for Long-term Storage* (Walker, 1990).

2.8.8 The timetable for depositing archives with the receiving institution after completion of the post-fieldwork programme will be agreed based on a Method Statement prepared for the Developer by the Archaeological Contractor following fieldwork.

2.8.9 If records are to be copied to microfilm for the purposes of archive storage, then the guidelines set out in IfA Paper No. 2 *Microfilming archaeological sites* (1999) will be applied. The Archaeological Contractor should contact the relevant national receiving institution to check their requirements. The microfilm and one diazo duplicate will be submitted to the local receiving institution and one diazo duplicate submitted to the National receiving institution.

2.8.10 In England, The National Monuments Record (NMR) is the repository for fieldwork records. The NMR operates a policy for the selection of records relating to sites of national importance.

2.8.11 For Scotland, the National Monuments Record of Scotland at the Royal Commission on the Ancient and Historic Monuments is the elected repository for all fieldwork records generated during archaeological fieldwork.

2.8.12 For Wales, the Royal Commission on the Ancient and Historic Monuments of Wales acts as the repository for the deposition of all archaeological fieldwork records and archives.

2.8.13 For Northern Ireland the Built Heritage Division, Department of the Environment in Northern Ireland acts as the repository for the deposition of all fieldwork records.

3 ARCHAEOLOGICAL SAMPLES AND ARTEFACTS

3.1 Environmental Sampling Strategies

3.1.1 Deposits (i.e. sediments) of archaeological/historical/cultural interest that do not comprise artefactual remains will not be considered to be ‘finds’ but may be subject to sampling. Any artefactual material subsequently discovered in the course of processing such samples would be treated as finds thereafter.

3.1.2 For each programme of archaeological work, environmental sampling strategies and methods – including methods for processing, assessing and/or analysing samples – will be set out in the Method Statement for the archaeological work.

3.1.3 Approaches and methods will be consistent with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (Centre for Archaeology Guidelines, English Heritage 2002) and *Geoarchaeology: using earth sciences to understand the archaeological record* (English Heritage 2007). It should be noted that a second edition of *Environmental Archaeology* is forthcoming from English Heritage.

3.2 Environmental Samples: Handling, Labelling, Packaging and Storage

3.2.1 All environmental samples will be satisfactorily and legibly labelled, and recorded on a register of samples. Sample record sheets will provide information on type, reason for sampling, size, context and sample numbers, spatial location, date taken, and a brief description/interpretation.

3.2.2 All environmental samples will be stored in appropriate conditions by the Archaeological Contractor pending any assessment and analysis.

3.2.3 Geotechnical and geoarchaeological samples should also be handled, labelled, packaged and stored in accordance with guidelines set out in the above document.

3.2.4 For geotechnical and geoarchaeological samples derived from developer-led sampling programmes, the

Developer will ensure that samples are made available for geoarchaeological recording and sub-sampling, in accordance with the archaeological Method Statement, prior to any processes that may render the sample ineffective, such as strength testing.

3.3 Artefacts: Handling, Labelling, Packaging and Storage

3.3.1 All retained finds will be processed in accordance with the IfA’s *Standard and guidance for the collection, documentation, conservation and research of archaeological material* (IfA, 2005 revised October 2008). All finds will be recorded and labelled appropriately.

3.3.2 All finds and other items of archaeological interest have an owner, but the law regarding ownership varies according to the character of the material, the environment in which it was found, and national legislation. From the point of discovery, all finds will be held by the Archaeological Contractor in appropriate conditions pending further recording, investigation, study or conservation. Ownership will be transferred to the institution receiving the archive unless other arrangements are agreed with the Archaeological Curators.

3.3.3 Artefacts that are exposed in the course of scheme works will be recovered by the Archaeological Contractor or, where recovery is impracticable, recorded. All finds will be recorded by context and in the case of significant objects (‘special finds’), in three dimensions using a unique sequence of reference numbers.

3.3.4 Recovered objects will be selected, retained or disposed of in accordance with the policy agreed with the institution receiving the archive, and in consultation with the Archaeological Curators.

3.3.5 Subject to the agreement reached with the receiving institution regarding selection, retention and disposal of material, the Archaeological Contractor will retain all recovered objects unless they are undoubtedly of modern or recent origin. The presence of discarded objects will, however, be noted on context records. In these circumstances sufficient material will be retained

to characterise the date and function of the deposit from which it was recovered.

3.3.6 In the event of the discovery of unexpected, unusual or extremely fragile and delicate objects and deposits, the Retained Archaeologist, the Developer and the Archaeological Curators will be notified immediately. Additional work required to recover, record, analyse, conserve and archive such objects and deposits will be agreed in consultation with the Archaeological Curators.

3.3.7 In the event of the discovery of items that may be eligible for legal protection, the Archaeological Contractor will immediately notify the Retained Archaeologist, who will notify the relevant legal authority as soon as possible. The Developer and the Archaeological Curators will be notified as soon as possible.

3.3.8 The Retained Archaeologist will prepare and implement a finds monitoring and maintenance programme, which will cross-refer to finds management/monitoring systems maintained by the Archaeological Contractor(s)/Developer.

3.3.9 Contingency will be made for specialist advice and conservation needs on-site should unexpected, unusual or extremely fragile and delicate objects be recovered, and the advice and input from an appropriate Conservation Service will be sought through the Archaeological Contractor's Finds Manager. A range of internal and external specialists will be consulted as appropriate.

3.4 Ordnance

3.4.1 In the event that any item(s) of ordnance is discovered it should be treated with extreme care as it may not be inert. Industry guidelines provided by the Developer must be followed prior to any recording of items for archaeological purposes.

3.4.2 Depending on the items' age, ordnance may be of archaeological interest, especially when discovered with other related material from a wreck, either shipwreck or aircraft, and should be recorded if it is safe to do so.

3.4.3 Any firearms and ammunition (e.g. from a crashed military aircraft) are likely to be subject to the Firearms Acts (various dates). Ammunition should be regarded as ordnance, irrespective of its size.

3.5 Human Remains

3.5.1 All archaeological work in respect of human remains will be in accordance with the standards set out

in the *IfA Technical Paper No 7 Guidelines to the Standards for Recording Human Remains* (IfA 2004).

3.5.2 In the case of the discovery of human remains, at all times they should be treated with due decency and respect. For each situation, the following actions are to be undertaken, and in any event, the Retained Archaeologist will inform the Developer and Archaeological Curators:

- for human remains on land and in intertidal areas, application should be made to the Ministry of Justice for an exhumation licence under the Burial Act 1857;
- for human remains within territorial waters where the remains have been intentionally buried, application should be made to the Ministry of Justice for an exhumation licence;
- in all other cases, the Retained Archaeologist will immediately inform the Coroner and the Police. If neither the Coroner nor the Police propose to investigate the remains, they may be dealt with as set out in the following paragraph.

3.5.3 Where practical the human remains will be left *in situ*, covered and protected. Where it has been established that the Coroner or Police have no interest in the remains, or their disturbance or removal is not subject to an exhumation licence under the Burial Act 1857 but development will unavoidably disturb them, then all excavation and post-excavation processes will be in accordance with the standards set out in *IfA Technical Paper No 7 Guidelines to the Standards for Recording Human Remains* (IfA 2004). In those instances where a licence for their excavation is issued by the Ministry of Justice, the requirements of that licence will also be followed.

3.5.4 Where human remains have been found and development will unavoidably disturb them, the remains will be fully recorded, excavated and removed from the site.

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

3.6 Aircraft

3.6.1 The majority of aircraft wrecks are military and so fall under the legal protection of the Protection of Military Remains Act 1986. Archaeological Contractors should refer to guidance outlined in *COWRIE Historic Environment Guidance* (Wessex Archaeology, 2007) and *Draft Interim Guidance on the use of the Protocol for Reporting Finds of Archaeological Interest in relation to Aircraft Crash Sites at Sea* (Wessex Archaeology, 2008).

3.6.2 Any finds that are suspected of being military aircraft will be reported immediately to the Retained Archaeologist (where appointed). The Developer will be informed as well as the Service Personnel and Veterans Agency (SPVA: Joint Casualty and Compassionate Centre – SO3 Historic Casualty Casework). Any subsequent actions will be guided by *Crashed Military Aircraft of Historical Interest: Licensing of Excavations in the UK – Guidance Notes for Recovery Groups* (MOD/SPVA, April 2007) and by advice received from SPVA. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately in accordance with paragraph 14 of *Guidance Notes for Recovery Groups*.

3.6.3 In England, reference should also be made to guidance produced by English Heritage on aircraft crash sites: *Military Aircraft Crash Sites: Archaeological guidance on their significance and future management* (English Heritage, 2002). In Wales, reference should also be made to guidance produced by Cadw in *Caring for Military Sites of the Twentieth Century*.

3.7 Wreck

3.7.1 Archaeological artefacts that have come from a ship are ‘wreck’ for the purposes of the Merchant Shipping Act 1995. Developers, via their Archaeological Contractors, should ensure that the Receiver of Wreck is notified, either on behalf of or directly by the Developer, for all items of wreck that have been recovered. The Developer may prefer to retain control of the reporting process due to legal responsibilities under the Merchant Shipping Act 1995.

3.8 Materials Conservation and Storage

3.8.1 All recovered materials, on land and underwater, will be subject to a Conservation Assessment to gauge whether special measures are required while the material is being held. In the case of material recovered from underwater or inter-tidal areas, the conservation assessment will take place no more than four weeks after recovery. If warranted, all or part of the Conservation Assessment will be carried out at an earlier stage (for example, in advance of recovery, or onboard immediately following recovery).

3.8.2 This Conservation Assessment will be carried out by the Retained Archaeologist or an Archaeological Contractor with an appropriate level of expertise, with advice from appropriate specialists and following recommendations in the *Guidance for Archaeological Conservation Practice* (ICON, 1990).

3.8.3 The Retained Archaeologist (where appointed) or an Archaeological Contractor with appropriate expertise will implement recommendations arising from the Conservation Assessment.

3.8.4 Objects that require immediate conservation treatment to prevent deterioration will be treated according to guidelines laid down in *First Aid for Finds* (Leigh, Watkinson and Neal (eds.) 1998) and/or *First Aid for Underwater Finds* (Robinson 1998). A full record of any treatment given will be made by the person applying the treatment and these records will form part of the archive.

3.8.5 Specialist conservation work approved by the Developer and the Archaeological Curators on metalwork, bone (including worked bone), human remains and other organic remains, industrial waste, ceramic material, glass and lithic material will be carried out by appropriately qualified Archaeological Contractors, monitored by the Retained Archaeologist.

3.8.6 Where no special measures are recommended, finds will be conserved, bagged and boxed in accordance with guidelines set out in the Archaeology Section of the ICONs *Conservation Guidelines No 2: packaging and storage of freshly excavated artefacts from archaeological sites* (1993).

3.8.7 Plans for the permanent storage of the finds and samples should be determined in line with the *Conservation Guidelines No. 3: environmental standards for the permanent storage of excavated material from archaeological sites* (ICON 1993).

3.8.8 Materials conservation and storage will accord with the *IfA Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2008).

4 ARCHAEOLOGICAL EXCLUSION ZONES

4.1 Introduction

4.1.1 Archaeological Exclusion Zones (AEZs) agreed between the Developer and Archaeological Curators will be the principal means used to preserve *in situ* any features or deposits of known or potential archaeological interest.

4.1.2 The Offshore Renewables Protocol for Archaeological Discoveries (The Crown Estate 2010) provides for Temporary Exclusion Zones (TEZs) to be introduced when discoveries are made. The TEZ may be lifted following advice, or may form the basis of an AEZ in the event that further disturbance should be avoided.

4.1.3 The Developer will require its contractors to conduct all construction activity in such a way as to prevent any impacts by construction or related works within any AEZs, including impacts from plant and equipment that is not directly engaged in construction.

4.1.4 Although AEZs are fixed, provision is made below for their alteration, following appropriate archaeological investigation and consultation, should this become necessary before or during construction.

4.1.5 The design, alteration and removal of AEZs will be subject to agreement with Archaeological Curators.

4.1.6 The Developer will notify its contractors of AEZs and of any alteration or removal of AEZs.

4.2 Location and Extent of Archaeological Exclusion Zones

4.2.1 Provision will be made for AEZs around confirmed sites, anomalies and palaeo-geographic features that can be safeguarded *in situ*.

4.2.2 AEZs are formed by establishing a buffer around the known extents of sites, or around geophysical anomalies for which the available evidence suggests that there could be archaeological material present on the seabed. For sites and anomalies for which there is insufficient detailed information available to ascertain the site's archaeological importance, the AEZ will be

implemented based on the potential apparent to the Retained Archaeologist.

4.2.3 Details of individual AEZs will normally be appended to the WSI. The baseline data used to establish the AEZ will be incorporated within the details of the AEZ. This baseline data will form the basis for subsequent monitoring of the AEZ, supplemented by such other data that becomes available.

4.3 Establishing New Archaeological Exclusion Zones

4.3.1 If new finds of archaeological importance come to light during the course of construction, they may also be subject to the implementation of additional AEZs. This includes conversion of a TEZ to an AEZ as a result of ground truthing or new information.

4.3.2 The need for and the design (position, extent) and implementation of any new AEZs will be subject to the agreement of Archaeological Curators.

4.4 Altering Archaeological Exclusion Zones

4.4.1 AEZs may be altered (enlarged, reduced, moved or removed) as a result of further data assessment or archaeological field evaluation of data covering those areas that are subject to AEZs. Further data assessment could include a formal archaeological analysis of new geophysical data, and archaeological field evaluation could include suitable high-resolution geophysical survey and/or field survey.

4.4.2 The alteration of AEZs will only be undertaken with the agreement of Archaeological Curators. Following alteration, a new plan giving details of the AEZs will be drawn up and issued to each relevant party.

4.5 Monitoring of Archaeological Exclusion Zones

4.5.1 Provision for monitoring AEZs will be set out in a method statement agreed between the Developer and the Archaeological Curators with reference to any

relevant regulatory consent. Monitoring will take place relative to the baseline data used to establish the AEZ and continue for the duration set out in the scheme-specific WSI.

4.5.2 Development-related activities will not be undertaken within an AEZ. If it becomes apparent that activities have taken place within any AEZ, the party responsible will obtain advice from the Retained Archaeologist in accordance with their obligations with respect to AEZs and the detail of the scheme-specific WSI as relevant to any identified AEZs.

4.5.3 Periodic Archaeological Reports will be prepared to review whether there have been any incursions into each AEZ and whether there are still archaeological grounds for maintaining each AEZ. Archaeological Reports on AEZs

will include recommendations regarding amendment of the extent, removal and/or creation of new AEZs.

4.5.4 Following completion of construction, a report will be compiled on the effectiveness of the AEZs during construction, any alterations to them, and the results of the monitoring.

4.5.5 Post-construction monitoring will be carried out in accordance with the methods and timescales set out in the scheme-specific WSI with a view to identifying any impacts on AEZs attributable to indirect effects of construction. The duration of monitoring should be consistent with the time frame for monitoring processes (e.g. sediment transport) that have been identified as having possible indirect archaeological effects.

5 MARINE GEOPHYSICAL INVESTIGATIONS

5.1 Planning Further Geophysical Surveys

5.1.1 The specification of any proposed marine geophysical surveys whose primary aim is non-archaeological will be subject to advice from the Retained Archaeologist to ensure that archaeological input is provided at the planning stage and to enable archaeological considerations to be taken into account without compromising the primary objective of the survey.

5.1.2 The archaeological input will take the form of advice from a marine archaeologist with an appropriate level of expertise, coupled with relevant professional accreditation, on the following points:

- available details of sites and/or anomalies identified in previous studies;
- archaeological potential of areas where no existing sites and/or anomalies are yet known;
- geophysical sources/equipment;
- methodologies, including spacing and orientation of lines and cross lines;
- source/equipment settings;
- requirements for post-processing, interpreting and archiving resulting data.

5.1.3 Where a survey is carried out primarily to meet archaeological objectives, the specification shall be prepared by the Retained Archaeologist and carried out by a survey company with appropriate archaeological expertise.

5.2 Undertaking Further Geophysical Surveys

5.2.1 Where a survey is carried out primarily to meet archaeological objectives, the survey will be carried out by a survey company with appropriate archaeological expertise and including geophysicists with appropriate archaeological expertise onboard.

5.2.2 Where archaeological objectives have been added to a survey whose primary objectives are non-archaeological (e.g. engineering or environmental), consideration will be given to having an archaeologist or geophysicist with appropriate archaeological expertise onboard during the acquisition of data. The onboard

archaeologist will advise on the suitability for archaeological purposes of the data being acquired, and be able to propose, through communication with the Retained Archaeologist, minor changes to the survey method, settings, etc. in order to optimise archaeological results, and thereby minimise the need for repeat surveys.

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

5.2.4 Once the surveys have been processed to meet their primary objectives, the survey data – together with factual reports – will be made available in digital formats to an archaeologist or geophysicist with appropriate expertise in archaeological processing and interpretation.

5.3 Sidescan Sonar Survey

5.3.1 Sidescan sonar survey will be carried out at frequency, range and gain settings capable of resolving all objects that are 0.5m and above throughout the survey.

5.3.2 Where a survey is carried out primarily for archaeological purposes, line spacing will be equal to or less than the effective range, and no more than 1.75x the effective range, to ensure that the seabed is ensonified at least twice (from different directions), enhancing object recognition and ensuring coverage directly beneath survey lines. Known sites and anomalies of apparent archaeological potential will be 'boxed' by at least two and preferably four lines along and across the principal axis of the anomaly. These lines will be offset so that the anomaly does not lie immediately beneath the fish, and run at optimal frequency and range settings for imaging the anomaly.

5.3.3 Towfish height and speed will be carefully monitored during the survey to maintain optimum data quality and resolution.

5.3.4 Sidescan sonar data will be made available in the form of raw, un-mosaiced files in a suitable proprietary format.

5.4 Magnetometer Survey

5.4.1 Magnetometer survey will be carried out using a caesium gas or equivalent system capable of resolving anomalies of 5 nano Teslas (nT) and above.

5.4.2 The magnetometer towfish should be towed as close to the seafloor as possible and operated with a sample rate of at least 4Hz.

5.4.3 Lines can be run in conjunction with other sensors (i.e. on the same line spacing and orientation) but provision should be made to run additional lines and cross-lines across known sites and anomalies of apparent archaeological potential as indicated by desk-based information or any of the other sensors.

5.4.4 Magnetometer data will be made available as cleaned, de-spiked text (x,y,z) files for each line, including layback.

5.5 Sub-bottom Survey

5.5.1 Sub-bottom survey will be carried out using a source capable of resolving internal structures to the full depth of anticipated scheme impacts within Quaternary deposits.

5.5.2 The system should be able to penetrate up to 40m sub-seabed with a vertical resolution of 0.3m or better at the seabed with no ringing.

5.5.3 Where a survey is carried out primarily for archaeological purposes, line and cross-line spacing and orientation will be sufficient to resolve the extents and characteristics of the principal Quaternary deposits.

5.5.4 A pulse test of the seismic source will be undertaken prior to survey.

5.5.5 A single beam echosounder will be run in conjunction with the sub-bottom survey; the first reflector (seabed) should be levelled with reference to a tide gauge.

5.5.6 Sub-bottom data will be made available in a suitable proprietary format.

5.6 Multibeam Survey

5.6.1 Where a multi-beam survey is to be carried out mainly for archaeological purposes a beam-forming system capable of achieving an effective cell/bin size better than 1m is preferred.

5.6.2 Where an anomaly of apparent archaeological potential is identified, a single slow pass will be carried out at the highest possible ping rate.

5.6.3 Single beam and multi-beam data will be made available as de-spiked and tidally-corrected text (x, y and z) files for each line, in addition to any gridded/rendered surfaces. In relation to multibeam data, backscatter data should be included (if collected) along with the associated survey log.

5.7 Archaeological Interpretation of Further Geophysical Data

5.7.1 New geophysical survey data will be interpreted by an archaeologist with an appropriate level of expertise.

5.7.2 Raw survey data, together with factual reports and trackplots, will be made available in digital formats to the Archaeological Contractor.

5.7.3 Archaeological interpretation will include:

- examination of sidescan, magnetometer, sub-bottom and multibeam data for the area and surroundings of known wreck sites and previously identified geophysical anomalies;
- examination of sidescan, magnetometer, sub-bottom and multibeam data within areas that will be subject to scheme impacts in order to identify as yet unknown wreck remains;
- assessment of sub-bottom data in order to plot the general trend of the sub-surface sediments with archaeological potential;
- following the initial assessment, further detailed interpretation of sub-bottom data within those areas that will be subject to scheme impacts.

5.7.4 Sidescan and sub-bottom data will be interpreted initially on the basis of line-by-line review in an un-mosaiced format. The interpretation of point data (multibeam, single beam and magnetometer) will include reference to original point-cloud data and not be limited only to post-processed surfaces.

5.7.5 The results of further geophysical interpretation will be compiled as an Archaeological Report consistent with the Model Clauses on reporting that will identify new features or deposits (if any) that warrant additional mitigation measures or further investigation. Archaeological Reports on geophysical surveys will set out the methods used in processing and interpreting the geophysical data.

5.7.6 The requirements under this section should be implemented with regard to any policies for mitigating disturbance to European marine species.

6 MARINE GEOARCHAEOLOGICAL INVESTIGATIONS

6.1 Planning Geoarchaeological involvement in Geotechnical Surveys

6.1.1 The specification of any proposed geotechnical surveys will be subject to advice from the Retained Archaeologist to ensure that archaeological input is provided at the planning stage and to enable archaeological considerations to be taken into account. The geotechnical specification will also be informed by any previous stages of work, for example archaeological interpretation of geophysical data (see 5.7.1).

6.1.2 The archaeological input will take the form of advice from an archaeologist with appropriate expertise, on the following points:

- available details of deposits and surfaces of archaeological interest identified in previous studies, including the results of geophysical work and deposit modelling;
- archaeological potential of areas from which there is no previous evidence;
- the suitability for archaeological purposes of the proposed geotechnical methods and equipment;
- methodologies, including positioning and spacing of trial pits/cores/boreholes and transects;
- requirements for the archaeological description and sub-sampling of geotechnical exposures, cores and samples to yield the necessary information, to include the presence of archaeologists with appropriate expertise during trial-pitting, coring and/or extrusion;
- requirements for processing, interpreting and archiving resulting data.

6.1.3 Archaeological Curators will be consulted regarding the proposed locations of geotechnical work and will be provided with the results of each stage of investigation (see below).

6.1.4 It is recommended that a timetable and policy for the storage, retention and disposal of samples is agreed and set out in a Method Statement, at the outset of the project, between the Developer, Curator and any receiving institutions.

6.1.5 The advice set out in the forthcoming COWRIE guidance on optimising geotechnical survey material for historic environment analysis (in press) will be taken into account.

6.2 Geoarchaeological Investigations

6.2.1 A structured approach will be taken to any necessary archaeological analysis of the material obtained as appropriate to satisfy the requirements of the Archaeological Curators for delivery of the required mitigation measures.

6.2.2 The objectives, approaches and methods to be applied in each geoarchaeological investigation will be set out in a Method Statement which will be subject to agreement with Archaeological Curators.

6.2.3 Consultation will be held between the Archaeological Contractor (and Retained Archaeologist, where appointed) and the contractor undertaking geotechnical investigations in order to enable the relevant samples to be retained for geoarchaeological analysis.

6.2.4 Geotechnical cores, or a representative sample of cores agreed with the Archaeological Contractor, will be retained undisturbed until a selection of cores for archaeological recording has been made. If the cores cannot be retained then further steps should be taken, such as having an archaeologist present during sampling operations.

6.2.5 The Developer should ensure that the core logs are available for review. The geotechnical contractor should assist with flexibility of sub-sampling prior to discard/destruction of samples.

6.3 Archaeological Review of Geotechnical Logs

6.3.1 A competent Archaeological Contractor will review borehole/vibrocore/CPT logs on completion of the geotechnical investigations carried out by the geotechnical contractor.

6.3.2. This review will provide an overview of the sedimentary sequence within the area, including whether there is any organic material present and whether there are homogenous sedimentary layers across the area.

6.3.3 Based on this review, recommendations will be made regarding the need for further examination of selected core samples. The scope of any further work will be agreed by the Developer and Archaeological Curators. If no further work is recommended a final report will be produced by the Archaeological Contractor. Guidance given in COWRIE (in press) *Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector* will be adhered to.

6.4 Splitting and Recording Geotechnical Cores

6.4.1 If the review of logs identifies sedimentary horizons with archaeological potential, a selection of core samples will be split and recorded archaeologically for a range of palaeo-environmental indicators and dating material.

6.4.2 One undisturbed half of each selected core sample is required for archaeological recording. The recording programme will comprise:

- the longitudinal splitting of each core sample and the cleaning of half of each sample; and
- the detailed archaeological recording of each sample, noting sediment colour, type and inclusions.

6.4.3 The results of archaeological recording should be presented as a report, to be agreed with the relevant local or national Archaeological Curators. The report will include recommendations indicating whether sampling and laboratory assessment of core samples is warranted to produce an appropriate representation of the area subject to development. The Archaeological Curators will advise the Developer on the necessary work to complete the necessary analysis and interpretation. If no further work is recommended by the Archaeological Curators a final report will be produced by the Archaeological Contractor.

6.5 Sub-sampling

6.5.1 If archaeological recording identifies sedimentary horizons with the potential for the preservation of palaeo-environmental evidence, sections of core containing such evidence should be sub-sampled for environmental indicators such as plant macros, pollen, diatoms, ostracods and foraminifera, and for scientific dating.

6.5.2 Sub-sampling will comprise collection of small (circa 1 cm³) samples from selected points within the sedimentary sequence in the selected core(s).

6.5.3 Sub-sampling may occur in the course of archaeological recording of cores (above), especially if the cores are available for a limited time. Sub-sampling may, however, be deferred to form part of the assessment stage, below, to benefit from lengthier consideration in conjunction with other sources if there is scope to re-open the cores once decisions about assessment have been made.

6.6 Laboratory Assessment of Sub-samples

6.6.1 If warranted by the results of archaeological recording (above), sub-samples will be subject to lab-based assessment of the value of the palaeo-environmental material (pollen, diatoms, ostracods and foraminifera) surviving within the cores.

6.6.2 The assessment programme will also comprise scientific (e.g. radiocarbon) dating.

6.6.3 If no further work is recommended, and in agreement with the Archaeological Curators, the Archaeological Contractor will produce a final report (see 6.8.1).

6.7 Laboratory Analysis of Samples

6.7.1 If the assessment identifies significant palaeo-environmental evidence full analysis will be undertaken, involving the complete counts, identification and interpretation of the pollen, diatom, ostracod and foraminifera samples. If scientific dating has not occurred previously, then such dating will accompany this analysis.

6.7.2 Laboratory analysis will result in an account of the successive environments within the coring area, a model of environmental change over time, and an outline of the archaeological implications of the analysis. It will include the incorporation of the results into a model of the seabed sediments and palaeo-topography based on analysis of geophysical (sub-bottom) data.

6.8 Geoarchaeological Report

6.8.1 The Archaeological Contractor will produce a final report at the end of the last stage to which geoarchaeological investigation proceeds. To the extent available, the final report will integrate the results of review, recording, assessment, analysis and dating. The report will address the palaeo-topography and prehistory of the area affected by the development, including relevant data generated by desk-based assessment and other field investigations, including geophysical surveys.

6.8.2 The geoarchaeological report will be prepared in a manner consistent with the Model Clauses on reporting (above) and agreed with the Archaeological Curators prior to finalisation and deposit.

7 ARCHAEOLOGICAL INVESTIGATIONS USING DIVERS AND/OR ROVS

7.1 Non-Archaeological Diver/ROV-Surveys

7.1.1 In order to maximise the potential benefits of any proposed diver/Remote Operated Vehicle (ROV) surveys undertaken primarily for engineering, ecological or other non-archaeological purposes, the Developer will seek archaeological input at the planning stage of any such works. Any such survey specification will be informed by previous stages of the project, including any documentary studies, as well as geophysical and geotechnical analysis, so that archaeological considerations can be taken into account.

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

- the available details of sites and/or anomalies identified in the desk-based assessment;
- the archaeological potential of areas where no existing sites and/or anomalies are yet known;
- the type and level of diver/ROV positioning, voice recording and video/still recording to be utilised; and
- the provision of clear guidance on the types of sites and finds that are to be reported and recorded.

7.1.3 Where the primary objectives of dive survey are non-archaeological, consideration will be given to having an Archaeological Contractor present during any diver or ROV surveys, either as observer(s) or participating diver(s) to optimise archaeological results and thereby reduce the need for repeat survey.

7.2 Review of data collected by Non-Archaeological Diver/ROV surveys

7.2.1 Following the completion of a non-archaeological diver/ROV survey, all data, including video footage, will be reviewed by an Archaeological Contractor with appropriate expertise.

7.2.2 This review will identify any sites that are potentially of archaeological interest – typically this will

involve the identification of vessel remains, rather than just stray artefacts. The report will identify those sites and/or geophysical anomalies that may warrant further investigation. It will also identify those sites that are no longer of archaeological interest, and hence may be removed – for example – from the list of Archaeological Exclusion or Temporary Exclusion Zones (AEZs or TEZs).

7.2.3 If the review of data collected by diver/ROV survey identifies sites of archaeological interest that will be subject to impact during construction then the Developer will discuss with Archaeological Curators whether an Archaeological diver/ROV-based assessment is required.

7.3 Archaeological diver/ROV-based site assessment

7.3.1 Archaeological diver or ROV-based investigations will take place where the primary objectives are archaeological and the diving is led by archaeologists.

7.3.2 Archaeological diver and/or ROV surveys can be employed in order to gather archaeological data concerning wreck sites and geophysical anomalies to safeguard the archaeological record or to alter (enlarge, reduce, move or remove) existing AEZs or TEZs. Specifically, an archaeological diver or ROV-based assessment may be required where it is not possible to protect an archaeological site through the implementation of an AEZ or where visual clarification is sought in order to confirm or amend an AEZ or TEZ.

7.3.3 Diver/ROV assessment primarily for archaeological purposes will be undertaken by an Archaeological Contractor with a marine archaeological team with the appropriate expertise and experience of the environment/conditions likely to be encountered.

7.3.4 Every dive will be recorded using a digital video system with helmet-mounted camera or the ROV's onboard instrumentation.

7.3.5 The position of the diver/ROV will be determined using an acoustic navigation system. The position will be

integrated into a diver tracking and recording system where the position of the objects on the seabed can be compared to the geophysical data, and the extent and character of the features recorded.

7.3.6 Recording will be conducted to a level whereby a statement can be made as to the date, character, extent and archaeological importance of the site. Significant diagnostic features will be recorded by photography backed up with written records and measurements. Limited documentary research may also be required to support the assessment of importance.

7.3.7 Details of levels for wreck recording are outlined in Appendix I.

7.4 Reporting

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

7.4.2 The report will be prepared in a manner consistent with the Model Clauses on reporting and agreed with the Archaeological Curators prior to finalisation and deposit.

8 ARCHAEOLOGICAL WATCHING BRIEFS

8.1 General

8.1.1 A watching brief is a formal programme of archaeological monitoring and will involve attendance by an Archaeological Contractor during groundworks in the terrestrial or inter-tidal zone, during offshore obstruction clearance and other activities associated with the scheme.

8.1.2 Attendance will be by an archaeologist or geoarchaeologist (as appropriate) with an appropriate level of expertise during intrusive groundworks or other site activity/investigation associated with the development.

8.1.3 All watching brief activities will be conducted in accordance with the standards outlined in the IfA's *Standard and Guidance for an archaeological watching brief* (IfA 1994 revised 2008), as well as Chapters 2 and 3 of this document and the scheme-specific WSI and accompanying Method Statements.

8.1.4 An archaeologist will attend development activities that are operating in areas considered to be of medium or high archaeological potential as defined by the relevant Curator. The watching brief will allow for either constant or intermittent monitoring as appropriate, based on the requirements of scheme-specific WSI and method statements. In areas of low potential (where monitoring does not take place) a Protocol for Archaeological Discoveries (PAD) will be in operation.

8.1.5 The Archaeological Contractor will seek to minimise any impact on the Developer's programme caused by the archaeological investigation.

8.2 Actions in the Course of Development Activities

8.2.1 Excavated surfaces and up-cast material will be inspected by the Archaeological Contractor. Any finds will be collected and allocated a record number and their position will be logged. A suitable metal detector may be used to enhance artefact recovery.

8.2.2 Archaeological features or structures will be examined and/or excavated. A sufficient sample of each layer/feature type will be investigated in order to elucidate the date, character, relationships and function of the feature/structure.

8.2.3 Any standing section of trench edge will be inspected by the Archaeological Contractor, where safe to do so.

8.2.4 Development activities will include provision for sampling of features and deposits in order to recover artefacts, ecofacts and dating evidence, and in order to determine stratigraphic relationships. Recording will include written, drawn, and photographic elements as conditions allow.

8.2.5 Where appropriate, sieving of bulk environmental samples will be undertaken to enhance levels of artefact recovery. Bulk soil samples may be taken specifically for artefact recovery.

8.2.6 Where construction equipment is not capable of being observed (e.g. towed grapnels), the equipment should be periodically recovered to the surface and inspected for artefacts or other material of archaeological interest. All such material should be photographed, recorded and stored.

8.2.7 If significant archaeological or palaeo-environmental deposits are encountered then the Developer, in consultation with the relevant Curator, will make provision for the Archaeological Contractor to undertake a programme of investigation commensurate with the evidence discovered.

8.3 Recording and Reporting

8.3.1 A site plan at an appropriate scale will be annotated with the position of areas observed in relation to the construction footprint. The plan will show the location of features observed and recorded in the course of the investigations. The site plan should include a note of the position-fixing method and the accuracy achieved.

8.3.2 The basic record of each feature/structure identified during the watching brief should include:

- a full photographic record;
- drawn record (plans and sections);
- position in three dimensions; and
- a written description including initial interpretation and contextual relationships.

8.3.3 Positions will be related to National Grid and Ordnance Datum (above the MLWM) or WGS84 and LAT (below the MLWM).

8.3.4 Finds will be allocated a record number (from a continuous unique numbering system) and their position, along with any features and/or layers of archaeological interest, will be logged in an appropriate manner.

8.3.5 The archaeological results will be compiled in a report by the Archaeological Contractor, in accordance with the requirements outlined in *Standard and Guidance for archaeological watching briefs* (IfA 1994 revised 2008).

9 SOURCES OF GUIDANCE AND FURTHER READING BY TOPIC/CHAPTER

9.1 General Guidance

- Cadw, *Caring for Coastal Heritage* (1999)
- Cadw, *Caring for Military Sites of the Twentieth Century* (2009)
- DECC, *Draft National Policy Statement for Renewable Energy Infrastructure (EN-3)* (2009)
- DEFRA, *Our Seas – A shared resource: High level marine objectives* (2009)
- English Heritage, *England's coastal heritage: A statement on the management of coastal archaeology* (1996)
- English Heritage, *Military Aircraft Crash Sites – Archaeological guidance on their significance and future management* (2002)
- English Heritage, *Wind Energy and the Historic Environment* (2005)
- English Heritage, *Management of Research Projects in the Historic Environment – MoRPHE* (2006)
- English Heritage, *Conservation Principles: policies and guidance* (2008)
- Historic Scotland, *Conserving the Underwater Heritage, Historic Scotland* (1999)
- Historic Scotland, *Scottish Historic Environment Policy* (2009)
- Institute for Archaeologists, *Standard and Guidance for the stewardship of the historic environment* (2007)
- Joint Nautical Archaeology Policy Committee, *Code of Practice for Seabed Development* (2006)
- Wessex Archaeology, *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector, Published Guidance Note* (2007)
- Wessex Archaeology, *Draft Interim Guidance on the use of the Protocol for Reporting Finds of Archaeological Interest in relation to Aircraft Crash Sites at Sea* (2008)

9.2 Archaeological Recording, Reporting, Data Management and Archiving

- AHDS, *Digital Archives from Excavation and Fieldwork: Guide to Good Practice* (2000)
- Archaeology Archives Forum, *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (2007)

- Institute for Archaeologists, *Standard and Guidance for Archaeological Desk Based Assessment* (1994, revised 2008).
- Institute for Archaeologists, *Standard and Guidance for archaeological field evaluation* (1994, revised 2008).
- Institute for Archaeologists, *Standard and Guidance for archaeological watching briefs* (1994, revised 2008).
- Institute for Archaeologists, *Standard and Guidance for archaeological excavation* (1995, revised 2008)
- Institute for Archaeologists, *Standard and Guidance for archaeological investigation and recording of standing buildings or structures* (1996, revised 2008)
- Institute for Archaeologists, *IfA Technical Paper No. 2: Microfilming archaeological sites* (1999)
- Institute for Archaeologists, *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2008)
- Institute for Archaeologists, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives* (2009)
- Society of Museum Archaeologists, *Retention and dispersal of Archaeological Collections; Guidelines for use in England, Wales and Northern Ireland* (1993)
- Walker, K., *Guidelines for the preparation of excavation archives for long-term storage* (ICON, 1990)

9.3 Archaeological Samples and Artefacts

- English Heritage, *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (2002)
- English Heritage, *Geoarchaeology: using earth sciences to understand the archaeological record* (2007)
- Institute for Archaeologists, *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (2008)
- Institute for Archaeologists, *Technical Paper No 7: Guidelines to the Standards for Recording Human Remains* (2004)
- Institute for Conservation (ICON), *Conservation Guidelines No. 2: Packaging and Storage of Freshly-Excavated Artefacts from Archaeological Sites* (1993)

Institute for Conservation (ICON), *Conservation Guidelines No. 3: environmental standards for the permanent storage of excavated material from archaeological sites* (1994)

Institute for Conservation (ICON), *Guidance for Archaeological Conservation Practice* (1990)

Leigh, D., Watkinson, D. and Neal V. (eds.) *First Aid for Finds* (1998)

Museums and Galleries Commission, *Standards in the Museum Care of Archaeological Collections* (1992)

Robinson, W., *First Aid for Underwater Finds* (1998)

9.4 Archaeological Exclusion Zones

Wessex Archaeology, *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector, Published Guidance Note* (2007)

9.5 Marine Geophysical Investigations

English Heritage, *MoRPHE Project Planning Note 1: Marine Archaeological Geophysical Survey* (2006)

Ruth Plets, Justin Dix and Richard Bates, *Marine Geophysics Data Acquisition, Processing and Interpretation Guidance Notes* (Forthcoming)

Wessex Archaeology, *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector, Published Guidance Note* (2007)

9.6 Marine Geoarchaeological Investigations

COWRIE, *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (Forthcoming)

Society of Underwater Technology: Offshore Site Investigation Group, *Guidance Notes On Site Investigations For Offshore Renewable Energy Projects* (Forthcoming)

Wessex Archaeology, *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector, Published Guidance Note* (2007)

9.7 Archaeological Investigations using Divers and/or ROVs

Wessex Archaeology, *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector, Published Guidance Note* (2007)

9.8 Archaeological Watching Briefs

Institute for Archaeologists, *Standard and Guidance for Archaeological Watching Briefs* (1994, revised 2008).

10 APPENDIX I: ARCHAEOLOGICAL WRECK RECORDING LEVELS

Level	Type	Objective	Sub-level	Character	Scope	Description
1	Assessment	A record sufficient to establish the presence, position and type of site	1a	Indirect (desk-based)	A basic record based on documentary, cartographic or graphic sources, including photographic (incl. AP), geotechnical and geophysical surveys commissioned for purposes other than archaeology	Documentary assessment / inventory of a site, compiled at the start of work on a site, and updated as work progresses
			1b	Direct (field)	A basic record based on field observation, walkover survey, diving inspection etc., including surveys commissioned specifically for archaeological purposes	Typically a 1–2 dive visit to the site (to assess a geophysical anomaly, etc.)
2	Evaluation	A record that provides sufficient data to establish the extent, character, date and importance of the site.	2a	Non-intrusive	A limited record based on investigations that might include light cleaning, probing and spot sampling, but without bulk removal of plant growth, soil, debris etc.	Typically a 2-4 dive visit to assess the site's archaeological potential, backed up by a sketch plan of the site with some key measurements included.
			2b	Intrusive	A limited record based on investigations including vigorous cleaning, test pits and/or trenches. May also include recovery (following recording) of elements at immediate risk, or disturbed by investigation	Either an assessment of the buried remains present on a site; the recovery of surface artefacts; or cleaning to inform, for example, a 2a investigation
3	<i>In situ</i>	A record that enables an archaeologist who has not seen the site to comprehend its components, layout and sequences.	3a	Diagnostic	A detailed record of selected elements of the site	The first stage of a full record of the site. This would include a full measured sketch of the site and a database (or equivalent) entry for all surface artefacts
			3b	Unexcavated	A detailed record of all elements of the site visible without excavation	Full site plan (i.e. planning frame or equivalent accuracy) with individual object drawings, and full photo record (possibly including a mosaic)
			3c	Excavated	A detailed record of all elements of the site exposed by open excavation of part or whole of the site	This may take the form of full or partial excavation of a site
4	Removal	A record sufficient to enable analytical reconstruction and/or reinterpretation of the site, its components and its matrix			A complete record of all elements of the site in the course of dismantling and/or excavation	
5	Intra-site	A record that places the site in the context of its landscape and other comparable sites.			A complete record of all elements of the site, combined with selective recording of comparable sites and investigation of the surrounding area	

11 APPENDIX III: GLOSSARY OF ACRONYMS

ADS	Archaeological Data Service	MHWM	Mean High Water Mark
AEZ	Archaeological Exclusion Zone	MIPU	Major Infrastructure Planning Unit
AHDS	Arts and Humanities Data Service	MLWM	Mean Low Water Mark
PAD	Protocol for Archaeological Discoveries	MOD	Ministry of Defence
DCMS	Department of Culture, Media and Sport	MoJ	Ministry of Justice
DECC	Department of Energy and Climate Change	NMR	National Monuments Record
DEFRA	Department for Environment, Food and Rural Affairs	OWF	Offshore Wind Farm
EH	English Heritage	ORs	Offshore Renewables
EIA	Environmental Impact Assessment	PAS	Portable Antiquity Scheme
HER	Historic Environment Record	RA	Retained Archaeologist
HS	Historic Scotland	ROV	Remote Operated Vehicle
ICON	Institute for Conservation	SPVA	Service Personnel and Veterans Agency
IfA	Institute for Archaeologists	TCE	The Crown Estate
IPC	Infrastructure Planning Commission	TEZ	Temporary Exclusion Zone
MEDIN	Marine Environment Data and Information Network	UKHO	United Kingdom Hydrographic Office

12 APPENDIX IV: LIST OF CONSULTEES

List of Consultees for The Crown Estate, Offshore Renewable Energy and the Historic Environment Consultation

Advisory Committee for Historic Wreck Sites	Joint Nautical Archaeology Policy Committee
Association of Local Government Archaeological Officers: Maritime Committee	Manx National Heritage
Association of Local Government Archaeological Officers: Planning & Legislation Committee	Marine Management Organisation
Cadw	Marine Scotland
Centrica	Ministry of Defence
Council for British Archaeology	Ministry of Justice
Department for Culture, Media and Sport	Nautical Archaeology Society
Department for Environment, Food and Rural Affairs	Northern Ireland Environment Agency
Department of Energy and Climate Change	Portable Antiquities Scheme
Department of Enterprise Trade and Investment	Receiver of Wreck (MCA)
Department of the Environment, Northern Ireland	Renewable UK
DONG Wind (UK) Ltd	RES
East Anglia Offshore Wind (SP Renewables)	Royal Commission on the Ancient and Historical Monuments of Scotland
English Heritage: Marine Team	Royal Commission on the Ancient and Historical Monuments of Wales
E.ON	Scottish Government
Fluor	Sea Energy Renewables
Forewind	The Crown Estate
Historic Scotland	UHI Millenium Institute
Infrastructure Planning Commission	Welsh Assembly Government: Energy Team
Institute for Archaeologists	Welsh Assembly Government: Marine Policy Team



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