Salamander Offshore Wind Farm

Offshore EIA Report

Volume ER.A.6, Plan 4: Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD)

SALAMANDER

Powered by Ørsted and
Simply Blue Group

Salamander Offshore Wind Farm

Written Scheme of Investigation and Protocol for Archaeological Discoveries

Produced for ERM Ltd. on behalf of Salamander Wind Project Company Ltd.

MSDS Marine MSDS Heritage

2023/MSDS22243/3

Salamander Offshore Wind Farm

Written Scheme of Investigation and Protocol for Archaeological Discoveries

Project Name	Salamander Offshore Wind Farm
Client	ERM Ltd. on behalf of Salamander Wind Project Company Ltd.
Client Project Number	0689625
MSDS Marine Project Number	MSDS22243
Author and contact details	Tony Brown tony@msdsmarine.co.uk 01332 300 043
Origination date	31/08/2023
Reviser (s)	Tony Brown
Date of last revision	03/04/2024
Quality Assurance Approval	Mark James
Version number:	1.4
Summary of changes	Revision of figure symbology and Applicant name

Glossary

Term	Definition
Anthropogenic	Of or relating to human activity.
Clinoform	A sloping depositional surface.
Fluviomarine (sediment/deposit)	Material laid down by joint sea and river processes.
Glacial (period)	An interval of time characterised by colder temperatures and glacier advances.
Glaciomarine (sediment/deposit)	Material laid down by joint glacier and sea processes.
Hominin	Human species: current, ancestral and closely related.
Interglacial (period)	An interval of time between glacial periods, characterised by warmer temperatures and glacier retreat.
Interstadial (period)	A minor period of glacier retreat during a glacial period; less pronounced than an interglacial.
Lithozone	An interval of geological strata defined on the basis of its characteristic lithostratigraphy.
Offshore Array Area	The offshore are within which the wind turbine generators and associated infrastructure will be located.
Offshore Development Area	Combined Offshore Array Area and Offshore Export Cable Corridor.
Offshore Export Cable Corridor	The area that will contain the offshore export cables between the boundary of the Offshore Array Area and Mean High Water Springs (MHWS).
Palaeochannel	A geological term describing a remnant of an inactive river or stream channel that has been filled or buried by younger sediment
Palaeoenvironmental	Of or relating to a past (usually prehistoric) environment.
Palaeolandscape	A past (usually prehistoric) landscape.
Pleistocene	The earlier and longer epoch of the Quaternary Period of earth's history.
Proglacial	Situated just beyond the edge of an ice sheet or glacier.
Quaternary	The most recent period of Earth's history; comprises the earlier Pleistocene and later Holocene epochs.
Salamander Project	The proposed Salamander Offshore Wind Farm, combining both onshore and offshore elements.
Stadial (period)	A minor period of colder conditions and glacial advance.
Study Area	Area of marine archaeological assessment, measured 2 km from Offshore Development Area (up to 200 m landward of MHWS).
Wider Survey Area	The extent of the site-specific geophysical survey undertaken at the time of writing.

Acronyms

Acronym	Definition
AAP	Area of Archaeological Potential
ACAS	Aberdeenshire Council Archaeology Service
AD	Anno Domini
ADS	Archaeological Data Service
AEZ	Archaeological Exclusion Zone
BC	(years) Before Christ
BP	(years) Before Present
CIfA	Chartered Institute for Archaeologists
CLV	Cable Lay Vessel
COWRIE	Collaborative Offshore Wind Research Into The Environment
DAC	Data Archive Centre
DE	Drag Embed (anchor)
ECC	Export Cable Corridor
ED50	European Datum 1950
EIA(R)	Environmental Impact Assessment (Report)
ES	Environmental Statement
GIS	Geographic Information System
HE	Historic England
HES	Historic Environment Scotland
HER	Historic Environment Record
INTOG	Innovation and Targeted Oil & Gas
JCCC	Joint Casualty and Compassionate Centre
LAT	Lowest Astronomical Tide
MBES	Multibeam Echo Sounder
MD-LOT	Marine Directorate – Licensing Operations Team
MEDIN	Marine Environment Data and Information Network
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MoD	Ministry of Defence
MPS	Marine Policy Statement
NL	Named Locations
NSC	Non-submarine contact
nT	Nano Tesla

Acronym	Definition
O&M	Operation & Maintenance
OAA	Offshore Array Area
OASIS	Online Access to the Index of Investigations
PAD	Protocol for Archaeological Discoveries
PDE	Project Design Envelope
PLGR	Pre-lay Grapnel Run
ROV	Remotely Operated Vehicle
SBES	Single Beam Echo Sounder
SBP	Sub-bottom Profiler
ScARF	Scottish Archaeological Research Framework
SCAUM	Standing Conference of Archaeological Unit Managers
SPVA	Service Personnel and Veterans Agency
SSS	Sidescan Sonar
TAEZ	Temporary Archaeological Exclusion Zone
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
UTM	Universal Transverse Mercator
WGS 1984	World Geodetic System 1984
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generator

Contents

Figures

Tables

1.0 Introduction

1.0.1 This document forms a Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD), produced to accompany the Environmental Impact Assessment Report (EIAR) **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage** in support of the Salamander Offshore Wind Farm project (hereafter referred to as "the Salamander Project") and the offshore components of the project (hereafter referred to as the "Offshore Development Area"). This WSI has been prepared at the pre-construction stage and may be updated as necessary.

1.0.2 The purpose of the document is to set out details demonstrating the archaeological mitigation for the offshore elements of the Salamander Project and how this mitigation will be enacted. The document also sets out further work which has been recommended within the EIAR chapter.

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

1.1 Location

1.1.1 The Salamander Project area is located c. 35 km east of Peterhead in the northeast of Scotland, with an Innovation and Targeted Oil & Gas (INTOG) exclusivity agreement for an area of c. 33.25 km^2 (Offshore Array Area (OAA)) in waters c. 86.5 to 101.6 m deep. The Offshore Export Cable Corridor is c. 35 km in length with an area of c. 47 km^2. The OAA and the Offshore Export Cable Corridor (ECC) are known collectively as the Offshore Development Area and form the focus of this WSI, which covers this area up to Mean High Water Springs (MHWS). The project location is shown by Figure 1.

1.1.2 A further project-specific term used is 'Nearshore Export Cable Corridor'. The Salamander Project has been unable to acquire site-specific data in the nearshore, approximately 8 km, region of the Offshore ECC (west of the 1°40' line to shore, hereafter referred to as the 'Nearshore Export Cable Corridor'). Due to safety restrictions related with deployed creels it was not possible for surveys to take place in this nearshore region.

1.2 Aims and objectives

1.2.1 The objectives of the WSI follow best practice guidance set out by The Crown Estate (2021). The objectives are to:

- set out the roles and respective responsibilities of the Applicant, Contractors and Retained Archaeologist and Archaeological Contractor(s) and formal lines of communication between the parties and with Archaeological Curator(s) (see Section 2.1);
- outline the known and potential archaeological receptors that could be impacted by the project (see Section 3.0);
- outline the agreed mitigation and archaeological actions that are to take place in various circumstances (see Section 5.0, in particular Section 5.3);
- set out the importance of research frameworks in setting objectives that are delivered through realisation of the work (see Section 4.0); and

- provide methodologies for these archaeological actions, to be employed on archaeological work conducted in the post-consent period (see Sections 6.0 and 7.0).

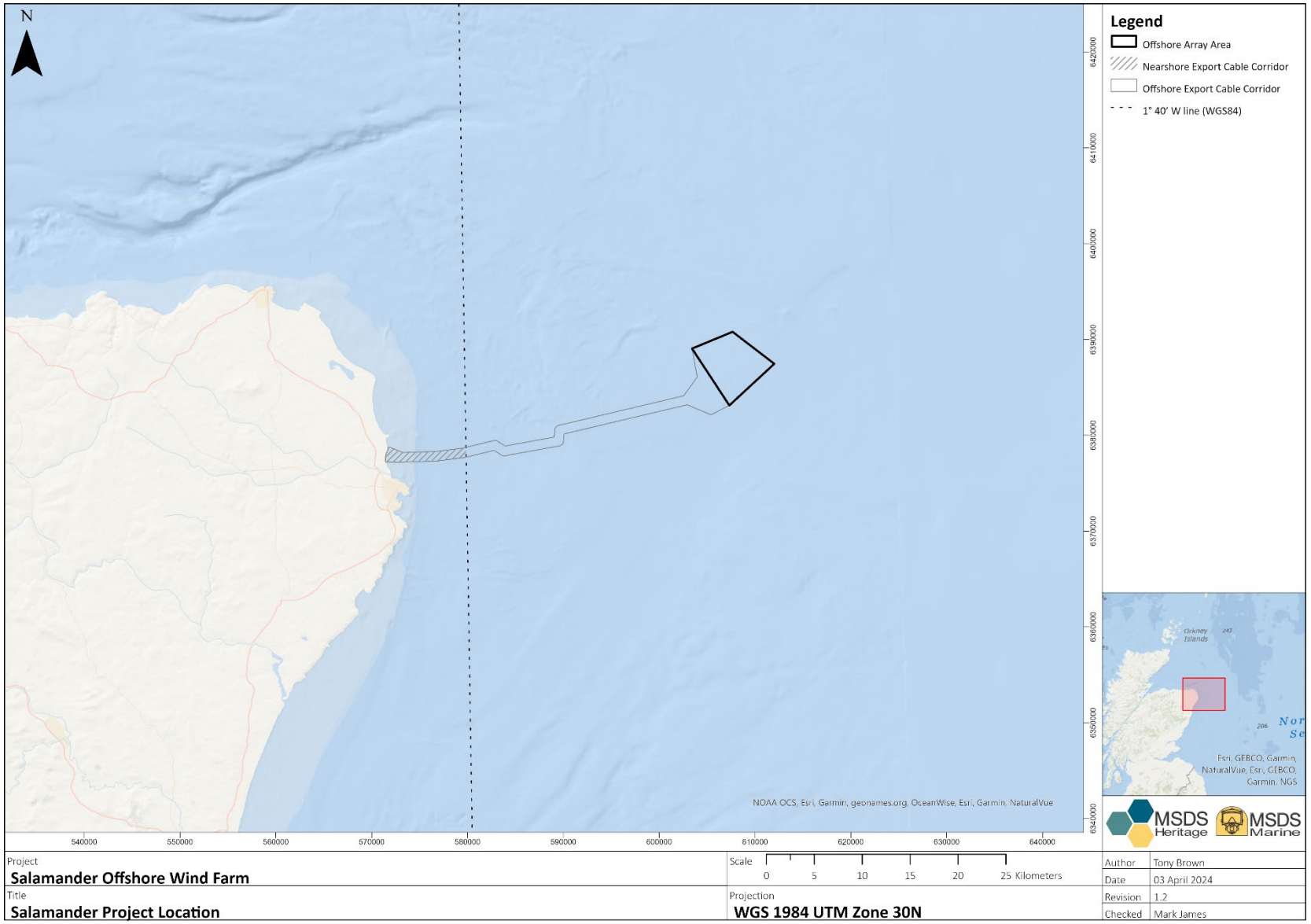

Figure 1: Salamander Project location.

1.3 Guidance

1.3.1 As described above, this document has been produced in line with best practice guidance, including:

- Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects by (The Crown Estate, 2021);
- Historic Environment Scotland's Managing Change in the Historic Environment: Asset Management (2020);
- Historic Environment Scotland's Designation Policy and Selection Guidance (2019);
- Historic England's (HE) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage (now Historic England), 2008);
- Scottish Government Planning Advice Notes, in particular 2/2011: Planning and Archaeology; Planning Advice Note 1/2013: Environmental Impact Assessment (amended 2017); Planning Circular 1/2017: Environmental Impact Assessment Regulations (Scottish Government 2017);
- Code of Conduct (Chartered Institute for Archaeologists (CifA, 2014 (updated 2022));
- Standard and Guidance for Historic Environment Desk Based Assessment (CifA, 2014 (updated 2020));
- COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology, 2007);
- Offshore Renewables Protocol for Archaeological Discoveries (The Crown Estate, 2014);
- Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather, 2011);
- Marine Geophysics Data Acquisition, Processing and Interpretation, Guidance Notes (English Heritage, 2013, currently under review by MSDS Marine for Historic England);
- Identifying and Protecting Palaeolithic Remains (English Heritage, 1998);
- Military Aircraft Crash Sites (English Heritage, 2002);
- Aircraft Crash Sites at Sea (Wessex Archaeology, 2008); and
- Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee, 2006).

1.4 Project description

1.4.1 This Section provides a summary of the Offshore Development. A full description is given by **Volume ER.A.2, Chapter 4: Project Description.**

1.4.2 The Salamander Project comprises the installation of new offshore and onshore infrastructure. The OAA will comprise up to seven floating Wind Turbine Generators (WTG), with floating foundations and moorings drag-embed (DE) anchors, vertical load anchors, gravity anchors, piled foundations or suction caisson foundations, linked with taut, semi-taut, tension or catenary mooring lines. The WTGs will be linked by up to eight inter-array cables (within the OAA), which will connect to up to two export cables (within the ECC). The export cables will traverse the length of the Offshore ECC to make landfall within the intertidal zone. The export cables will be carried onshore using a trenchless solution.

2.0 Implementation of the WSI

2.0.1 This Section sets out the responsibilities of Salamander Wind Project Company Ltd. ('the Applicant') and lines of communication during the pre-construction, construction, operation & maintenance (O&M) and decommissioning process for the Offshore Development Area with the aim of ensuring that the archaeological mitigation measures described are fully implemented in a timely manner that does not interfere with the smooth running of the proposed development programme.

2.1 Responsibilities and communications

2.1.1 Primary responsibility for the delivery of this WSI lies with the Applicant. Through project documentation and procedures, the implementation of this WSI will involve a range of archaeological contractors and curators.

2.1.2 The Applicant shall employ the services of a suitably qualified and experienced Archaeological Consultant (the Retained Archaeologist), to ensure the effective implementation of the WSI and other relevant commitments in relation to archaeology.

2.1.3 Additional Archaeological Contractors may be employed on an *ad hoc* basis, by either the Applicant or the Retained Archaeologist, if this task is delegated to them by the Applicant. Suitably qualified Archaeological Contractors may be called to provide a range of services relating to specialist archaeological provision (e.g. fieldwork, geotechnical analysis, etc.).

2.1.4 Historic Environment Scotland (HES) is the Archaeological Curator responsible for heritage matters in the marine environment up to mean high water springs (MHWS) in Scottish waters. HES will be consulted regarding activities undertaken as part of this WSI.

2.1.5 Local authority archaeologists are also curators onshore and out to mean low water springs (MLWS). This is relevant for the intertidal part of the Offshore Development Area, which lies within the remit of the Aberdeenshire Council Archaeology Service (ACAS). ACAS will be consulted regarding activities undertaken as part of this WSI which fall within the intertidal zone (between MHWS and MLWS).

2.1.6 Contact with the Archaeological Curators will be administered by the Applicant, under advice from the Retained Archaeologist. The Retained Archaeologist will report to the Applicant's appointed project contact in relation to the implementation of the WSI. Interaction with the Applicant's construction team will be administered by the project contact, advised by the Retained Archaeologist.

2.1.7 The responsibilities of the Retained Archaeologist will include:

- maintaining, reviewing and updating the WSI, as required;
- advising the Applicant on the necessary archaeological works and input required to the stipulations of this WSI are met;
- advising the Applicant which elements warrant archaeological involvement;
- advising the Applicant in the course of evaluating scope of work specifications on their capacity to meet archaeological requirements;
- advising the Applicant on the necessary interaction with third parties with archaeological interests, including the Archaeological Curators;

- advising the Applicant on the implementation of generic archaeological requirements applicable to all construction activities;
- advising the Applicant on the micrositing of infrastructure covered by this WSI, based upon archaeological results from Environmental Impact Assessment (EIA) and pre-construction surveys;
- advising the Applicant on Method Statements for archaeological investigations;
- preparing Method Statements for archaeological activities;
- ensuring that the Applicant copies Method Statements to the Archaeological Curator for approval;
- implementing and monitoring the Protocol for reporting finds of archaeological interest based on the Protocol for Archaeological Discoveries (PAD);
- monitoring the work of and liaising with Archaeological Contractors, where this is not the Retained Archaeologist;
- monitoring the preparation and submission of archaeological reports, as appropriate, and making them available to the Archaeological Curator(s);
- preparing provisions for the management of the project archives in consultation with an appropriate museum; and
- advising the Applicant on final arrangements for analysis, archive deposition, publication and popular dissemination and the necessary schedule for these deliverables.

2.1.8 **Where Method Statements, reports or other deliverables are submitted by the Applicant to the Archaeological Curator, their agreement/acceptance will be assumed if no contrary response is received within 30 working days of submission**.

2.1.9 All relevant key contractors engaged in the construction of the project shall:

- familiarise themselves with the generic requirements of the WSI and make them available to their staff and/or subcontractors;
- obey legal obligations in respect of 'wrecks' and 'treasure' under the Merchant Shipping Act 1995 and Treasure Trove system, respectively;
- respect constraint maps, archaeological exclusion zones (AEZ) and temporary archaeological exclusion zones (TAEZ);
- assist and afford access to relevant activities by the archaeologists employed by the Applicant;
- inform the Retained Archaeologist of any environmental constraint or matter relating to health, safety and welfare of which they are aware that is relevant to the archaeologists' activities; and
- implement the protocol for reporting finds of archaeological interest.

2.1.10 Other roles are referred to within this document. Where this is the case these roles, and associated definitions, can be found within the protocol for reporting finds of archaeological interest (see Section 5.8 and Appendix A). These roles include the Site Champion and Nominated Contact.

2.2 Arrangements for reviewing the WSI

2.2.1 Provision will be made for the WSI to be revised as appropriate should elements of the project change or archaeological issues come to light. Any revisions will be prepared by the Retained Archaeologist and submitted to the Applicant who will ensure they are submitted to and

approved by the relevant Regulator (Marine Directorate – Licensing Operations Team (MD-LOT)), in addition to other relevant licencing and consenting bodies in consultation with the relevant Archaeological Curator. **Approval by the Archaeological Curator will be assumed if no response is received within 30 working days of submission**.

2.3 Monitoring compliance with the WSI

2.3.1 Compliance with this WSI will be ensured by regular meetings between the Retained Archaeologist and the Applicant. The regularity of meetings may alter during different phases of the development. These meetings ensure compliance through agendas which include discussions of the construction programme and any upcoming work which may require archaeological input, as per the stipulations of this WSI. The Retained Archaeologist also advises the Applicant of the required scope of any necessary works and plans these works at the meetings and other meetings as required.

2.3.2 Following this advice, appropriate method statements will be prepared as required for each element of the project which requires archaeological involvement, in line with the requirements of the WSI. These will be submitted to the Regulator and the Archaeological Curator(s) for approval. **Approval by the Archaeological Curator(s) will be assumed if no response is received within 30 working days of submission**. The Retained Archaeologist will ensure compliance with these method statements during the subsequent works, thereby also ensuring compliance with the WSI.

2.3.3 The performance of the WSI will also be monitored through the provision of archaeological reports, prepared to inform on the results of various activities undertaken under its auspices. These include a review of new geophysical, geotechnical and environmental data and the implementation of the PAD during all offshore project activities. These reports will be submitted to the Applicant, who will ensure their dissemination to the Archaeological Curators.

2.3.4 The responsibility for ensuring the implementation of the PAD (Appendix A) rests with the Applicant, who will ensure that its agents and contractors are contractually bound to implement the PAD.

2.3.5 Based on Section 5.8 and Appendix A, the Applicant and the Retained Archaeologist will agree the system for archaeological reporting through the PAD.

2.3.6 During any site evaluation/investigation or construction work that has the potential to affect any archaeological heritage assets, the Retained Archaeologist will advise the Applicant who will liaise directly with the Archaeological Curator(s) regarding site monitoring and reporting. The Applicant will be kept informed of any contact between the Retained Archaeologist and the Archaeological Curator(s). A programme of monitoring visits (if deemed appropriate) by the Archaeological Curator(s) and the Applicant will be agreed in advance of the commencement of work on site.

2.4 Health and safety

2.4.1 The Retained Archaeologist will ensure that any method statements prepared to meet the requirements of the WSI are compliant with the requirements of the Applicant's health and safety plans for the project.

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

2.4.3 All work will be carried out in accordance with the Health and Safety at Work Act 1974, the Management of Health and Safety at Work Regulations 1999, the SCAUM (Standing Conference of Archaeological Unit Managers) health and safety manual *Health and Safety in Field Archaeology* (SCAUM, 2007) and all other relevant health and safety legislation, regulations and codes of practice in force at the time.

3.0 Summary of known and potential archaeology

3.0.1 A baseline assessment, including desk-based assessment and archaeological assessment of geophysical survey data, has been undertaken in support of the EIAR, using a Study Area measuring up to 2 km from the Offshore Development Area within the marine environment and up to 200 m above MHWS. The methodology and results of this assessment are set out in detail within **Volume ER.A.4, Annex 17.3: Marine Archaeology and Cultural Heritage Technical Report**. The following Section contains a summary of the findings.

3.1 Summary of designated heritage assets

3.1.1 No marine designated heritage assets (Historic Marine Protected Areas or remains designated under the Protection of Military Remains Act 1986) or other designated heritage assets lie within the Offshore Development Area.

3.1.2 One Scheduled Monument, two Listed Buildings and one Conservation Area lie within the terrestrial part of the Study Area (200 m landward from the MHWS). As onshore assets, these are beyond the scope of this document and are not examined further here. A detailed assessment of onshore archaeology and cultural heritage receptors will be carried out as part of the **Salamander Project Onshore EIAR**.

3.2 Summary of non-designated heritage assets

3.2.1 A total of 14 non-designated heritage assets have been identified within the Offshore Development Area, comprising three wrecks (see Section 3.4.2 and Figure 2) and 11 documented losses. Duplicate records for the same vessel have been amalgamated into a single count, for example, the wreck of the *St Magnus* has separate UKHO, HER and Canmore records.

3.2.2 Geophysical anomalies of archaeological potential have also been identified within both the Offshore ECC and OAA. Site-specific geophysical survey was undertaken seaward from c. 8 km measured from MHWS (see Paragraph 1.1.2). Publicly available Admiralty Multibeam Echo Sounder (MBES) data was reviewed for c. 3.2 to 8.0 km seaward from MHWS (Admiralty Maritime Data Solutions, 2009). No geophysical data was available from MHWS to 3.2 km seaward. Collection of geophysical data up to c. 8 km seaward and archaeological review of the results has been identified as a commitment of the Salamander Project (Commitment Ref: Co2).

3.2.3 Additional wrecks and documented losses have been identified close to the Offshore Development Area but beyond its boundaries (see **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage** for further detail).

3.2.4 Three non-designated assets are recorded by the HER within the westernmost part of the Offshore ECC (close to MHWS), however, these are understood to represent duplicate records of Second World War pillboxes situated within the Onshore Development Area, slightly west beyond the Offshore Export Cable Corridor above MHWS.

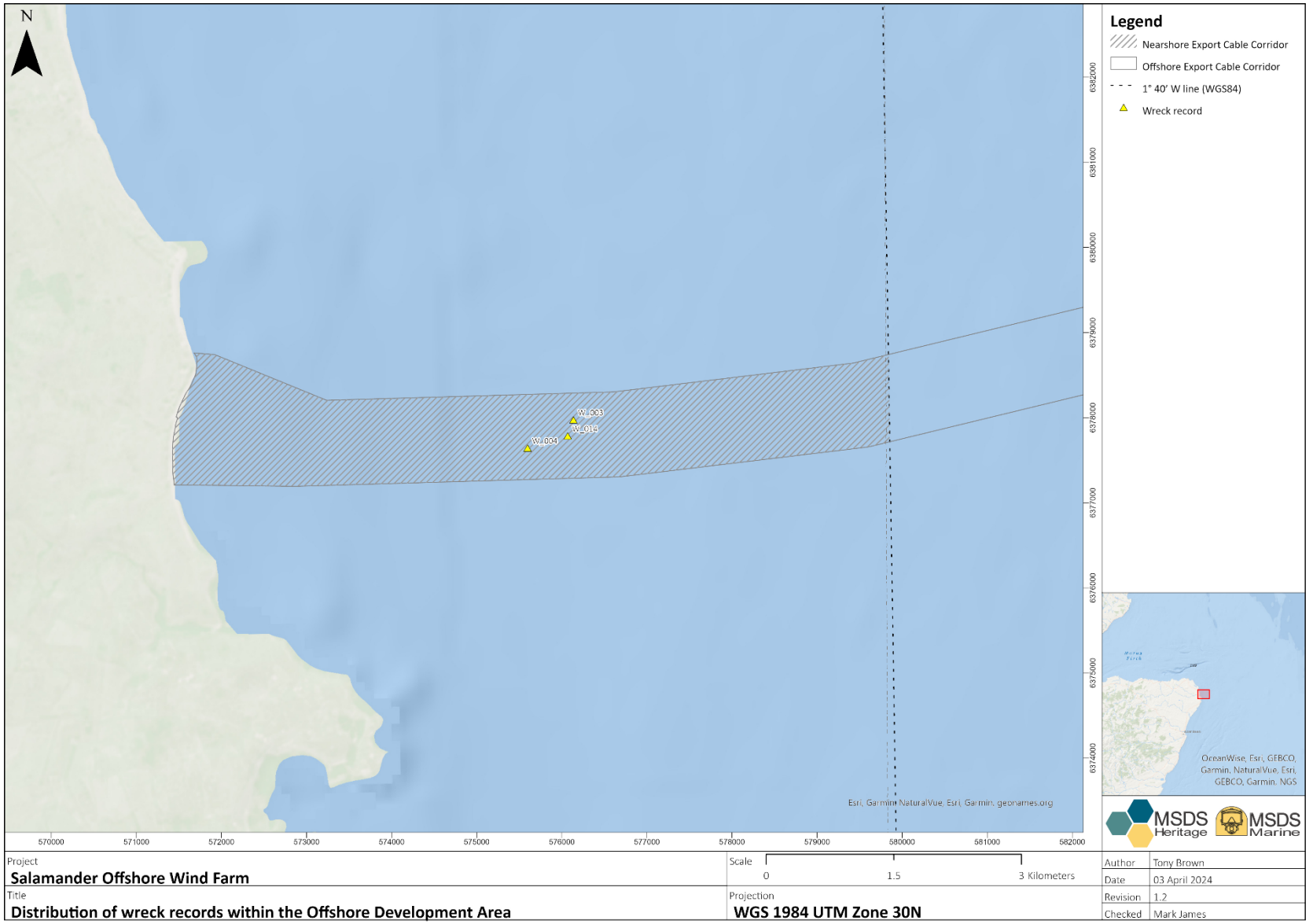

Figure 2: Distribution of wreck records within the Offshore Development Area.

3.3 Submerged prehistoric archaeology

3.3.1 The prehistoric archaeological record of the UK covers the period from the earliest hominin occupation, potentially as far back as 970,000 BP, to the end of the Iron Age and the Roman invasion of Britain in AD 43. The coastline of the UK changed drastically during this period and large tracts of what is now the seabed were once sub-aerially exposed. The UK has been affected by several glacial events over the last 1 million years, including the Anglian (480,000 to 430,000 BP), the Wolstonian (350,000 to 132,000 BP) and the Devensian (122,000 to 11,700 BP) and intervening marine transgressions, all of which have influenced archaeological potential.

3.3.2 Prehistoric archaeological potential is gauged with reference to evidence for human activity in the UK during each period and the contemporary environment within the Offshore Development Area. Depositional environment and post-depositional factors are also key to understanding potential and geological deposits identified within the Offshore Development Area form an important consideration in understanding archaeological, palaeoenvironmental and palaeolandscape potential. Deposits with potential for prehistoric archaeological remains or palaeoenvironmental information are generally those laid during periods of sub-aerial exposure or by fluvial process, rather than sub-glacial or marine deposits. However, there is also potential for archaeological material to be redeposited or reworked within secondary contexts resulting from fluvial erosion or glacial processes.

3.3.3 Eight Quaternary geological units have been identified using geotechnical and geophysical data, correlating with five major formations spanning the past c. one million years: the Witch Ground, the Forth, the Coal Pit, the Ling Bank and the Aberdeen Ground formations. The identified coverage of these units varies across the Offshore Development Area and is shown and discussed in greater detail in Volume ER.A.4, Annex 17.3: Marine Archaeology and Cultural Heritage Technical Report. No results of intrusive project-specific geotechnical investigations were available at the time of writing and accessible non-specific data was very limited. Correlations between units identified within the Offshore Development Area and deposits known in the wider area are therefore preliminary at this stage and further investigation is required to confirm the correlations. These units and their archaeological and palaeoenvironmental potential are summarised in Table 1 below.

3.3.4 There is potential for one or more of the identified Quaternary units to be present within the Nearshore ECC, which had not been included within the ground model (see Paragraph 1.1.2 and Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage.

Unit	Horizon	Interpretation	Lithology	Age	Arch. Potential	Palaeo-environmental potential
10	1	Surface sediments	Sand, with variable gravel inclusions.	Holocene MIS 1	Up to high	Very low
20	2	Witch Ground Formation	Upward transition from pebbly glaciomarine muds to fine sands and silts.	Devensian, Holocene MIS 2 to 1	Very low	Very low
30	3a	Internal reflector within Forth Formation	Well layered sands.	Holocene MIS 1	Very low	Moderate
	3b	Base of Forth Formation – two defined sub-units: St Andrew's Bay member (upper) and Largo Bay Member (lower)	St Andrew's Bay Member: fine to coarse sands.	Holocene MIS 1 (c. 10,000 to 7,000 BP)	Low (moderate if identified in Nearshore ECC)	
			Largo Bay Member: upward transition from boreal marine muds to pebbly glaciomarine muds.	Devensian, Holocene MIS 2 to 1 (c. 13,500 to 10,000 BP)	Very low	
40	4a	Internal reflector within Coal Pit Formation	Unrecorded.	Wolstonian, Ipswichian, Devensian MIS 6 to 3	Very low	Moderate
	4b	Base of Coal Pit Formation	Interlaminated marine sands and pebbly glaciomarine muds and sands.			
50	5	Ling Bank Formation	Marine silts with sand and clay interbeds; suggestion of gravelly sediments too, alongside water-lain sediments.	(possibly Anglian) Hoxnian, Wolstonian MIS (12) 11 to 10	Very low	Moderate
60	6	Aberdeen Ground Formation	Chaotic variety of temperate marine muds within sands to glaciomarine muds, sands and gravels.	Cromerian MIS 100 to 13	Very low	Moderate

Table 1: Units & horizons within the Offshore Development Area.

3.4 Maritime and coastal remains

3.4.1 This Section summarises the potential for remains relating to coastal and maritime cultural landscapes, defined as evidence of "human utilisation of maritime space by boat, settlement, fishing, hunting, shipping and its attendant subcultures, such as pilotage, lighthouse and seamark maintenance" (Westerdahl, 1992). Remains considered range from shipwrecks or other durable evidence, such as cargos and ballast, to features including navigational aids, sailing marks, ports, harbours and jetties. Other coastal remains which do not necessarily relate to boat use are also considered, including fish traps and other evidence of human interaction with the sea or coast, such as coastal wartime features.

3.4.2 The identified coastal and maritime archaeological resource within the Offshore Development Area can be summarised as:

- Three recorded wreck sites within the Nearshore ECC (see Figure 2; no wreck records currently exist within the remainder of the Offshore ECC or OAA), comprising:
  - Two wrecks with correlating UKHO records and publicly available geophysical survey identification (high potential geophysical anomalies), namely the *Muriel* (W_004) and the *St Magnus* (W_003);
  - One unnamed wreck, correlating with Canmore and HER records, but having no associated UKHO record or geophysical anomaly (W_014). This site has no recorded physical remains and its location close to both the *Muriel* and the *St Magnus* suggest that the diver sighting record (which informed the Canmore and HER records) may relate to either of these wrecks;
- High potential geophysical anomalies, which may represent additional wrecks (one identified within the Offshore Development Area (Offshore ECC), in addition to the two relating to known wrecks; see Figure 3);
- Medium potential geophysical anomalies, which may represent maritime archaeological remains (seven identified within the Offshore Development Area; see Figure 3);
- Low potential geophysical anomalies, unlikely to be of archaeological significance (77 identified within the Offshore Development Area; see Figure 3);
- Magnetic anomalies of uncertain origin (385 identified within the Offshore Development Area; see Figure 4); and
- Further potential for wreck sites and isolated maritime remains indicated by documented loss records.

Prehistoric (c. 970,000 BP to 400 AD)

3.4.3 Early prehistoric (Palaeolithic and Mesolithic) groups may have visited, exploited and possibly occupied the intertidal zone, taking advantage of the lacustrine and intertidal resources. There is currently no evidence of Palaeolithic seafaring in northern Europe and Mesolithic evidence of maritime activities is extremely rare, both nationally and internationally. A single Upper Palaeolithic flint blade and a small assemblage of Late Mesolithic or Early Neolithic flint artefacts have been recorded within the wider terrestrial environs of the Offshore Development Area.

3.4.4 Later prehistory in Scotland encompasses the Neolithic, Chalcolithic, Bronze Age and Iron Age periods. Roman influence had a much lesser impact on the cultures of northern Scotland than in England, particularly in the Highland zone, therefore, no distinct 'Roman' or 'Romano-British' period can be construed for those societies and the Iron Age is considered to last up to the

early medieval period (whereas in England and parts of Lowland Scotland, the Roman period is considered to begin with Claudius's invasion in 43 AD and end with the official withdrawal of the army and government in 410 AD).

3.4.5 There is a much greater resource of maritime activity evidence for later prehistory than for the earlier prehistoric periods, in regional, national and international records. In Scotland, prehistoric logboat remains are mostly encountered in lacustrine or fluvial sediments, such as the valley and mouth of the River Ugie, the latter situated c. 1.7 km to the south of the Offshore Development Area. Later prehistoric evidence recorded close to the river suggest that occupation took place during the Neolithic, Bronze Age and Iron Age, raising the potential for associated maritime activities to have taken place within the Offshore Development Area.

3.4.6 Despite this potential, evidence of later prehistoric maritime activity is very rare and no evidence of vessels from these periods has been identified within the Offshore Development Area or nearby. Additionally, the intertidal zone of the Offshore Development Area lies on a stretch of exposed coast, which would likely have been a less favourable location for maritime activity. The overall potential for later prehistoric remains to be present within the Offshore Development Area is very low. Volume ER.A.4, Annex 17.3: Marine Archaeology and Cultural Heritage Technical Report highlighted a slightly higher potential for Iron Age maritime remains, in consideration of the greater body of nearby terrestrial evidence.

Early medieval & medieval (400 to 1603 AD)

3.4.7 The Scheduled remains of the parish church of St Fergus (Scheduled Monument No. SM5622) are enclosed by the Onshore Development Area and relate to a former medieval coastal settlement. No associated evidence of medieval activity has been recorded and the settlement was abandoned prior to 1603 because of the encroaching sea.

3.4.8 Several other designated and non-designated medieval sites within the surrounding area relate to fortifications and fortified residences, including the old castle of Inverugie (HER ID: NK14NW0007; Canmore ID: 21270), an earthen motte known as 'Castle Hill' (Scheduled Monument No: SM3259) and Ravenscraig Castle (Scheduled Monument No: SM2496). Such sites are situated close to the River Ugie, within its valley or close to the river mouth. The site of the old castle of Inverugie is recorded below MHWS and the correlating Aberdeenshire HER entry mentions an associated former harbour, suggesting contemporary maritime activity which may have extended into the Offshore Development Area.

3.4.9 There is a low overall potential for evidence of medieval maritime activity within the Offshore Development Area, associated with local fishing and transport or international trade, however, no such remains have been recorded to date. Medieval maritime remains are generally very rare and any activity undertaken within the Offshore Development Area during this period was likely small scale.

Post-medieval & modern (1604 to present)

3.4.10 The recording of maritime history became common practice by the post-medieval period and our knowledge of contemporary and later maritime activity is therefore much more robust than for earlier periods. Documentary evidence of vessels lost during these periods provides evidence of maritime activity in the waters surrounding, and within, the Offshore Development Area.

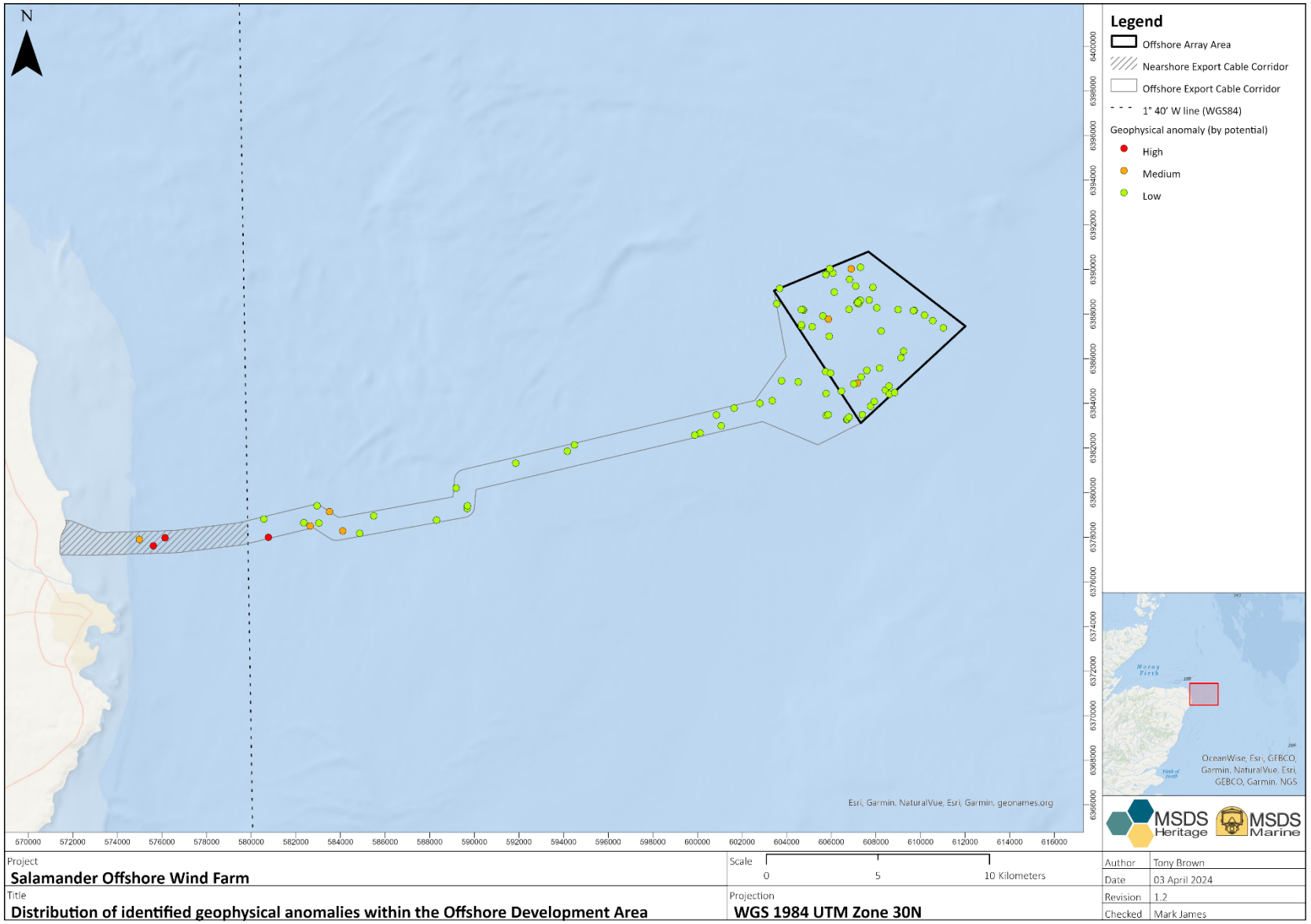

Figure 3: Distribution of identified geophysical anomalies within the Offshore Development Area.

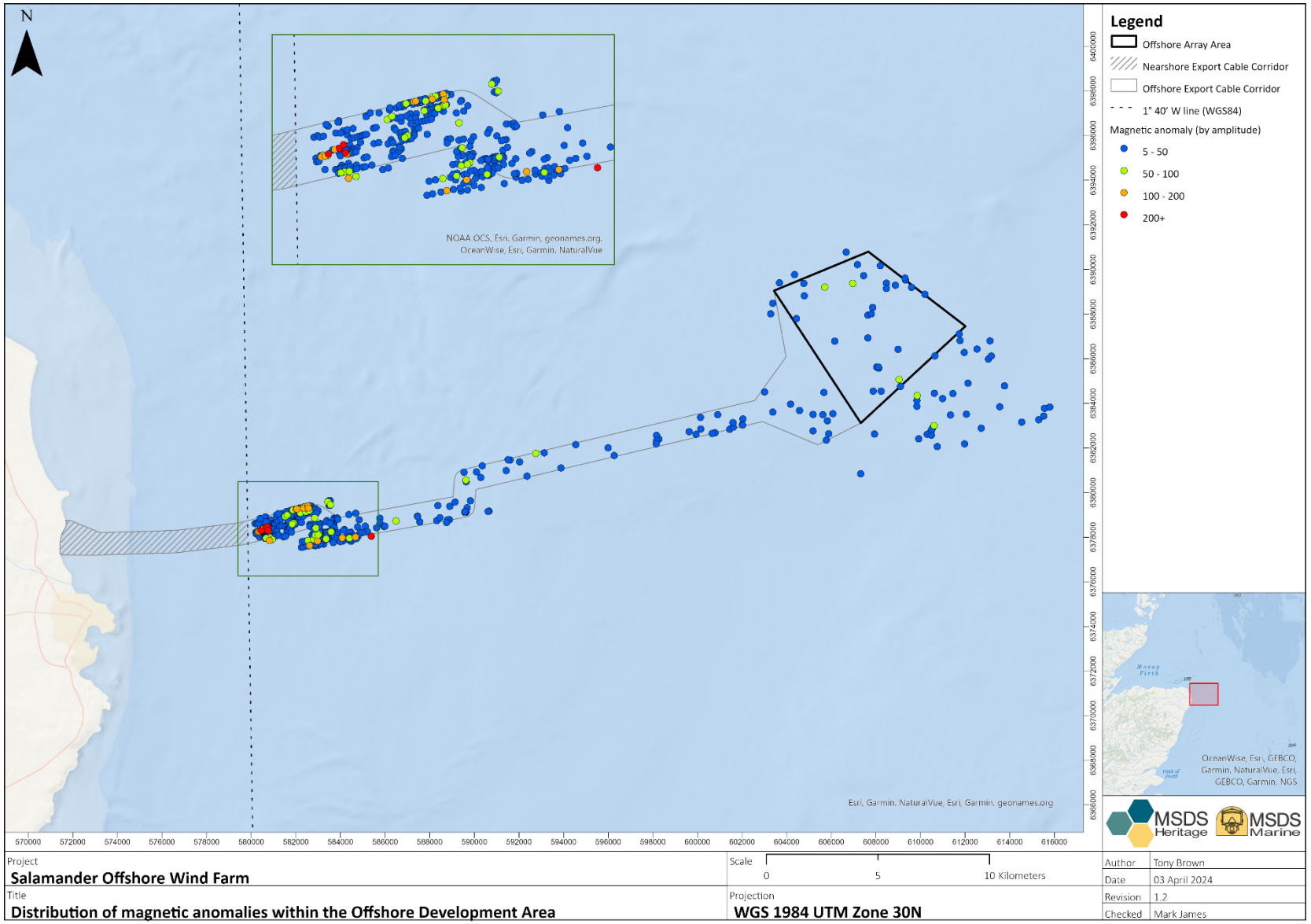

Figure 4: Distribution of magnetic anomalies within the Offshore Development Area.

3.4.11 Up to three identified wrecks and 11 records relating to positions describing the locations of lost vessels (documented losses) are recorded within the Offshore Development Area (accounting for duplicates – see Section 3.2.1). The three wreck records and nine documented losses are recorded within the Nearshore ECC, two documented losses within the remainder of the Offshore ECC and no records within the OAA.

3.4.12 The documented losses indicate local maritime activity from the 18th century onward and can be understood within the wider context of activity on land. Historic maps and terrestrial archaeological records give an indication of landward activity, which provides further information on the archaeological potential of the Offshore Development Area. Peterhead was founded as a fishing settlement in 1593, later becoming a major centre for the whaling industry and Buchanhaven was established in 1760 as a fishing village, though it may have had earlier origins. Historic maps show the development of settlements within the area, indicating local foci of activity.

3.4.13 Local maritime activity increased during each of the World Wars, seeing greater numbers of naval and transport vessels traverse the Offshore Development Area. The two named wrecks within the Offshore Development Area were sunk during the First World War: the *St Magnus* (W_003) on 12 February 1918; and the *Muriel* (W_004) on 17 September 1918.

Geophysical survey

3.4.14 A survey was conducted by Ocean Infinity (2022), resulting in the collection of MBES, Sidescan Sonar (SSS), Magnetometer, Sub-bottom Profiler (SBP) and Sparker data. The survey coverage included the Offshore Development Area seaward of c. 8 km seaward from MHWS and parts of the Study Area (though not all of the Study Area). In addition, publicly available Admiralty data (described as Single Beam Echo Sounder (SBES), but likely Multibeam), was consulted, covering c. 3.2 to 8 km seaward from MHWS (Admiralty Maritime Data Solutions, 2009). No geophysical data for MHWS to 3.2 km seaward was available at the time of writing.

3.4.15 Geophysical survey data provide further evidence of potential maritime archaeological sites (and potential aviation sites). A total of 86 anomalies of potential anthropogenic origin were identified within the Offshore Development Area using the MBES and SSS data (see Figure 3). These are categorised by potential and location within the Offshore Development Area in Table 2 below.

Archaeological potential	Count	
	Offshore ECC	OAA
High	3	0
Medium	4	3
Low	30	46
Total	37	49

Table 2: Archaeological potential of geophysical anomalies.

3.4.16 In addition, 385 magnetic anomalies were identified within the Offshore Development Area, ranging in amplitude from 5.0 to 580 nT (see Figure 4 and Table 3). Whilst the vast majority of these are unlikely to be of archaeological interest, some may represent anthropogenic material. All isolated anomalies of 50 nT or less are likely to be of limited archaeological significance, however, a low amplitude may be the result of distance between the anomaly and the sensor. Magnetic anomalies of >100 nT are typically described as large and have the potential to be of archaeological significance.

Amplitude (nT)	Count	
	Offshore ECC	OAA
≥200 nT	4	0
100 to 200 nT	11	0
50 to 100 nT	26	3
≤50 nT	319	22
Total	360	25

Table 3: Magnetic anomalies.

3.5 Aviation remains

3.5.1 There are no known aviation remains nor documented losses within the Offshore Development Area. The wider landscape, however, did hold associations with wartime aviation, particularly during the First World War and there exists a slight potential for aircraft remains to be present within the Offshore Development Area, for example represented by one or more of the geophysical and/or magnetic anomalies.

3.6 Intertidal and adjacent sites

3.6.1 The intertidal zone is included within the scope of this WSI, up to MHWS. Three Canmore records were identified within the intertidal zone, however, these were found to be duplicate records of nearby Second World War structures (pillboxes and anti-tank blocks) situated slightly above MHWS. These assets will be examined further by the onshore EIAR.

3.6.2 No archaeological remains or records pertaining to such have been identified within the intertidal zone of the Offshore Development Area, however, at the time of writing, no site-specific surveys had been undertaken below MLWS to c. 8 km offshore and only data of limited quality was reviewed from c. 3.2 to c. 8 km. No data between MHWS and 3.2 km seaward was reviewed. Further structures relating to the Second World War defences or other activities, however, may feasibly be present beneath the beach deposits.

3.7 Data limitations

3.7.1 The following data limitations have been identified by **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage**:

- Limited geophysical survey data between c. 3.2 to 8.5 km offshore from MHWS (MBES) (at 4 m resolution) and useful only for detecting larger features, such as wrecks;
- No geophysical survey data between MHWS and c. 3.2 km offshore;
- As is typical at pre-application, magnetometer survey spacing (85 m) provides an indication of potential ferrous objects (relatively large, depending on distance) but is limited in detection of buried ferrous objects, particularly smaller objects, at this stage; therefore, objects of archaeological interest may not have been identified;
- Positional accuracy of documented loss and wreck records can vary and may not correlate with seabed remains at that location; and
- Little geotechnical data available, hindering confident correlation of units with geological formations and limiting the accuracy of the palaeolandscape assessment and potential (see Paragraph 3.3.3).

4.0 Research agendas

4.0.1 The best practice guidance within *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects* (The Crown Estate, 2014) indicates that a WSI should "set out the importance of research frameworks in setting objectives that are delivered through realisation of the work".

4.0.2 Several research frameworks are of relevance to the archaeological remains and area of the Offshore Development Area. These include:

- The Scottish Archaeological Research Framework (ScARF) Marine and Maritime theme (ScARF, n. d);
- The NE Scotland Regional Research Framework (Aberdeen Council, 2013); and
- The North Sea Prehistory Research and Management Framework (Peeters *et al*., 2009).

4.0.3 Other frameworks, including those concerning specific themes other than those set out above, may also be relevant, depending on the specific work package undertaken. Any archaeological activities and reporting under this WSI will tie research into the relevant research frameworks, ensuring that the project contributes to archaeological knowledge of areas where research frameworks demonstrate a need for further understanding. The objectives of the research framework will be used to guide work and recommendations made by the Retained Archaeologist to the Applicant.

4.0.4 The connection with the specific work package to be undertaken and the relevant research framework, aims and objectives will be identified within the method statements which will precede archaeological work. The method statement(s) will also set out how the work undertaken will be tied into the relevant research framework during OASIS reporting (see Section 7.1).

5.0 Impacts and mitigation

5.1 Overview

5.1.1 Impacts relevant to marine archaeology are reviewed in detail within **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage** and a full description of the Offshore Development is given in **Volume ER.A.2, Chapter 4: Project Description**. In summary, the proposed development may include the following construction activities:

- Anchoring of WTGs and floating foundations, including drilling or piling for anchor installation or use of DE anchors;
- Mooring lines, including chain and clump weights;
- Subsea hub(s) and/or joint(s) and associated foundations;
- Cable installation, including inter-array cables and export cables;
- Seabed preparation, including sandwave levelling, boulder clearance and pre-lay grapnel runs (PLGR);
- Trenchless cable laying methods in the nearshore and intertidal area;
- Mooring/anchoring and positioning of vessels and ancillary equipment; and
- Installation of cable and scour protection, such as concrete and frond mattresses.

5.1.2 The landfall connection will be made using trenchless methods, passing beneath the surface of the intertidal zone to emerge above MHWS.

5.1.3 The maximum design scenarios identified in **Volume ER.A.2, Chapter 4: Project Description** have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the Project Design Envelope (PDE). Effects greater than minor adverse significance are not predicted to arise should any other design scenario, based on details within the PDE (e.g. different infrastructure layout), to that assessed here be taken forward in the final design scheme.

5.1.4 Operation and maintenance activities will take place during the 35-year lifespan of the project. The activities will include cable, mooring and anchor repair and replacement.

5.1.5 Decommissioning, it is assumed, will include removal of all installations and infrastructure.

5.2 Areas of work

5.2.1 Two primary areas have been defined for the purposes of this WSI, together forming the Offshore Development Area. These include:

- the Offshore Array Area; and
- the Offshore Export Cable Corridor (up to MHWS).

5.2.2 The westernmost part of the Offshore Development Area shares an overlap with the Onshore Development Area, defined by MHWS and MLWS.

5.2.3 The Offshore Development Area will be the focus for all offshore construction activities.

5.2.4 The installation of new cables, anchors and moorings will be within this area, as will associated seabed preparation activities, including sandwave and boulder clearance.

5.3 Mitigation

5.3.1 The Salamander Project has committed to a series of embedded mitigation measures regarding marine archaeology and cultural heritage, as presented within Table 4. These follow standard mitigation measures, engaged to manage the marine archaeological resource in line with current policy and guidance. Further detail is provided within **Section 17.8.3: Embedded Mitigation** of **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage**.

5.3.2 Archaeological mitigation specific to the Offshore Development Area of the Salamander Project has been defined as 'primary' or 'tertiary', where primary mitigation relates to decisions which affect the EIA and tertiary mitigation relates to best practice. No 'secondary' mitigation measures have been implemented (relating to additional measures needed to reduce significance of effects to acceptable levels).

5.3.3 All mitigation is linked to the Salamander Project commitments register.

Mitigation ID	Embedded mitigation	Further description and cross referencing in this document
Primary mitigation		
Co21	Marine Archaeological and Cultural Heritage receptors identified on the seabed within and adjacent to the Offshore Development Area will be subject to mitigation, via an Archaeological Exclusion Zone (AEZ), Temporary AEZ and/or Area of Archaeological Potential. These will be detailed and monitored through the Written Scheme of Investigation (WSI) as part of the tertiary mitigation	AEZ: established around identified sites of high and medium archaeological potential (see Table 5). Final cable routing, foundation siting and anchoring will avoid any known archaeological constraints identified in pre-construction site investigation surveys through micrositing. AEZs (or TAEZs) may be reviewed, amended or new areas added, on the basis of further data review (see Section5.4).
		AAP: operational awareness of the heightened potential for archaeological material within the Area of Archaeological Potential (AAP) (see Section 5.5).
Co22	Within the WSI, geotechnical cores will be undertaken post-consent and will be preceded by a method statement for curatorial review. These cores will be located to avoid any known seabed and intertidal heritage assets. Core logs will be reviewed to assess presence/ absence of deposits or archaeological interest. Geophysical and hydrographic data will be used to inform the Marine Archaeology and Cultural Heritage EIA. This would be undertaken in line with best practice guidance.	Archaeological input will be sought when locating, acquiring and storing geotechnical cores. Any geotechnical data will be subjected to archaeological review, as necessary (see Section 6.7).
		Any new geophysical data (including within the Nearshore ECC) will be subjected to archaeological review and mitigation reviewed as necessary (see Section 6.5).

	Review of new geophysical and geotechnical data will be undertaken as part of the WSI, with appropriate method statements produced. Review of geotechnical core location, acquisition and storage methodology prior to survey, core logs and photos will be completed as a minimum, with potential for a staged approach for any cores of archaeological interest. Core acquisition will also be subject to PAD and a watching brief or training for online review (where appropriate).	
Tertiary mitigation		
Co2	A pre-construction geophysical cable route survey will be undertaken, the results of which will also be used to identify presence of seabed features of interest that may require further consideration prior to construction works.	As above, any new geophysical data (including within the Nearshore ECC) will be subjected to archaeological review and mitigation reviewed as necessary (see Section 6.5).
Co23	The preparation of a Marine Archaeological and Cultural Heritage WSI and PAD to avoid or mitigate accidental impacts and manage discoveries of archaeological interest.	WSI & PAD: implementation of a protocol for avoiding, mitigating and managing finds of archaeological interest, following the guidance for the PAD (see Section 5.8 and Appendix A).

Table 4: Mitigation for Marine Archaeology and Cultural Heritage.

5.3.4 This WSI provides further mitigation options that may be employed as necessary during the Offshore Development. If implementation is agreed, detail of additional activities would be provided through task-specific method statements, to be prepared and agreed with Archaeological Curators on an 'as-needed' basis. Such activities may include:

- archaeologists to be consulted in the preparation of any pre-construction Remotely Operated Vehicle (ROV)/diver surveys and, if appropriate, in monitoring/checking of data (see Section 6.6);
- operational awareness of the location of those archaeological anomalies identified as having a low potential. Reporting through the agreed protocol will be undertaken should material of potential archaeological interest be encountered (see Section 5.8 and Appendix A);
- archaeologists to be consulted in the preparation of pre-construction cable route clearance or other pre-construction operations and, if appropriate, to carry out archaeological monitoring (e.g. a watching brief) of such work (see Section 5.6);
- mitigation of unavoidable direct impacts on known sites of archaeological significance: Options include i) preservation by record; ii) stabilisation; or iii) detailed analysis and safeguarding of otherwise comparable sites elsewhere. Direct impacts upon archaeological sites are not planned, all known sites of potential significance are protected by AEZs and will be avoided by development impacts. Should potential for any unforeseen and unavoidable impacts be identified, a method statement will be produced in agreement with Archaeological Curators, detailing how these will be handled and general archaeological

practices (see Section 5.7) will be followed where preservation by record or detailed analysis of sites elsewhere is an agreed approach. Methods for any stabilisation and safeguarding will be site-specific and will be detailed within a method statement, should the need for these interventions arise; and

- commitment to implementation of the Offshore WSI (the current document) prior to any post-consent works within the Offshore Development Area.

5.4 Exclusion zones

Archaeological Exclusion Zones

5.4.1 Best practice favours the *in situ* preservation of archaeological remains. Therefore, the preferred mitigation for archaeological remains is avoidance (COWRIE, 2007). AEZs have been proposed within the Offshore Development Area that prohibit development-related activities within their extents, which vary depending upon the nature of the site. All AEZs agreed with the Archaeological Curators, through this Offshore WSI, will be incorporated into constraints mapping, and provided to all contractors, and sub-contractors, typically within Vessel Information Packs (VIPs).

5.4.2 In view of their potential archaeological significance, AEZs will be placed around the ten high and medium potential geophysical survey anomalies. These anomalies have been recommended AEZs based on the size of the anomaly, the extents of any debris, the potential significance of the anomaly, the potential impact of the development and the seabed dynamics within the area. Dependent of the form of the anomaly, AEZs have either been recommended as a radius from the centre point of the anomaly or as a distance from the extents. Particularly in the case of shipwrecks, which tend to be longer in length than width, the use of a circle provides unequal protection around the extents. This not only impacts the protection afforded but does not present proportional mitigation. The proposed AEZs are listed in Table 5 and shown in Figure 5 and Figure 6. All positions are given in the World Geodetic System 1984 (WGS 1984) and Universal Transverse Mercator (UTM) Zone 30 North projection (WGS84 Z30N).

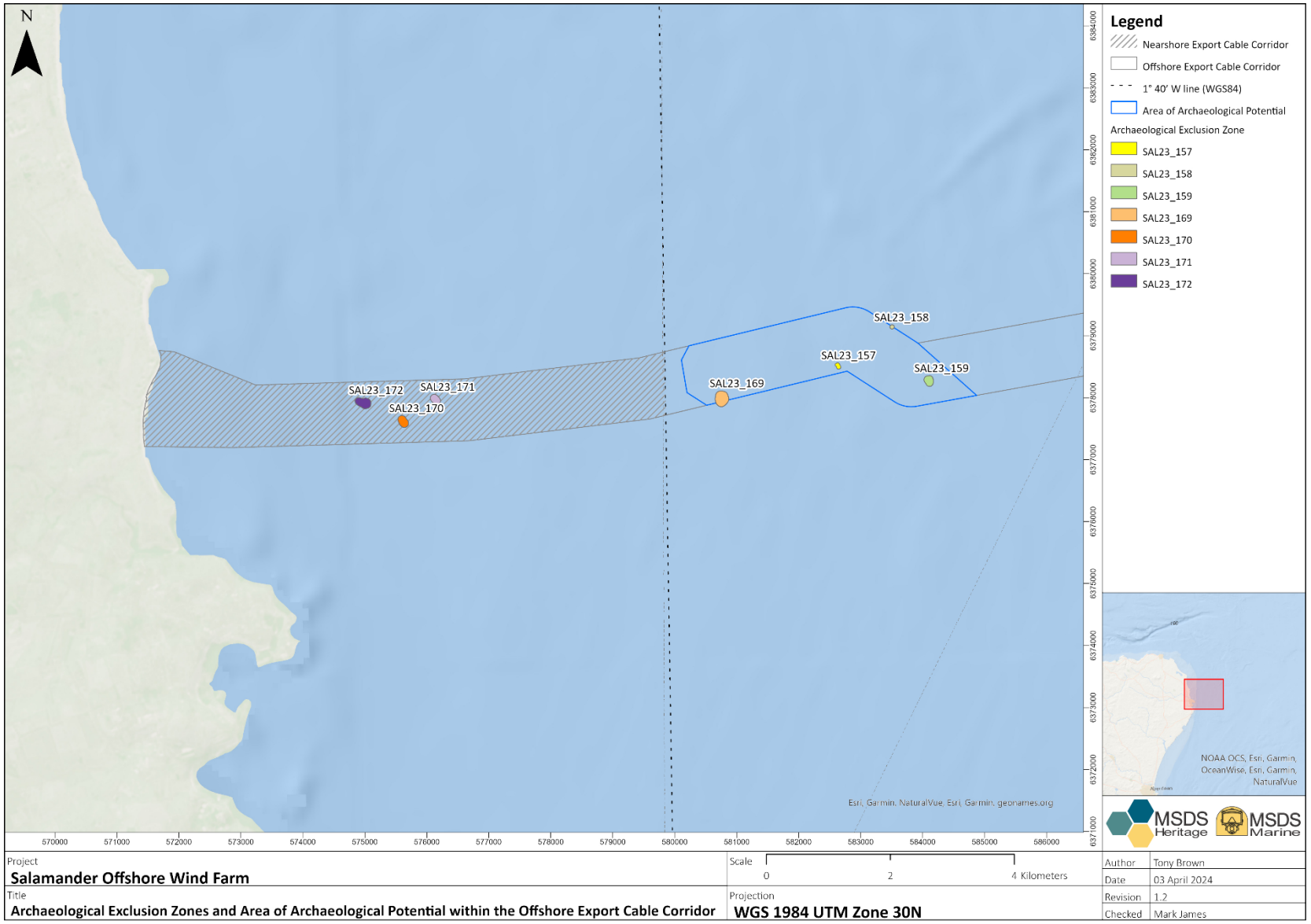

Figure 5: Archaeological Exclusion Zones and Area of Archaeological Potential within the Offshore Export Cable Corridor.

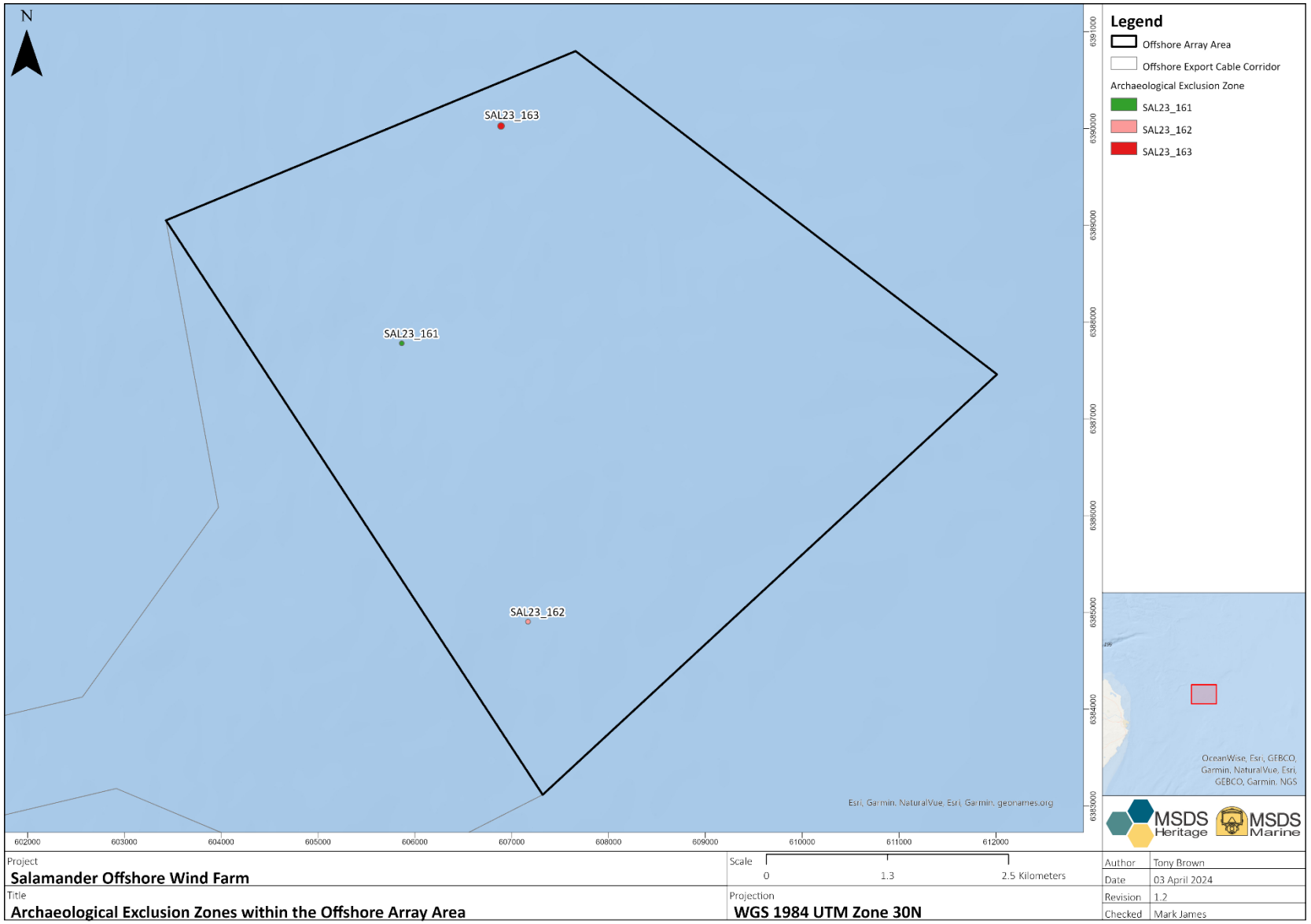

Figure 6: Archaeological Exclusion Zones within the Offshore Array Area.

MSDS ID	Description	Potential	WGS84 Z30N		AEZ size (m)	Type
			Easting	Northing		
SAL23_169	Potential wreck	High	580760.7	6377989.4	75	Extents
SAL23_170	Wreck – *Muriel*	High	575612.3	6377615.7	50	Extents
SAL23_171	Wreck – *St Magnus*	High	576136.8	6377970.4	50	Extents
SAL23_157	Potential debris	Medium	582640.9	6378506.1	25	Extents
SAL23_158	Potential debris	Medium	583506.3	6379142.1	35	Radius
SAL23_159	Potential debris	Medium	584098.5	6378282.4	50	Extents
SAL23_161	Debris	Medium	605864.1	6387780	25	Radius
SAL23_162	Debris	Medium	607168.2	6384905.2	25	Radius
SAL23_163	Debris	Medium	606889.8	6390024.4	35	Radius
SAL23_172	Potential debris	Medium	574985.2	6377902	50	Extents

Table 5: Archaeological Exclusion Zones.

5.4.3 The final development layout will consider these preliminary zones, which may evolve or be removed (with the agreement of the Archaeological Curators) as the project progresses, subject to layout designs and additional subsequent surveys that may be required. Scope is allowed for their amendment considering further evidence and with the involvement of consultees. There will be no impacts to finalised AEZs during construction, operation, maintenance and decommissioning activities.

Temporary Archaeological Exclusion Zones

5.4.4 Temporary Archaeological Exclusion Zones (TAEZs) are recommended where an anomaly is not visible in the geophysical dataset but is known to exist, based on information from other datasets (e.g. UKHO data), where the position cannot be determined with enough accuracy for refined exclusion zones or where the extents are not fully known. They are often larger than AEZs but are identified as temporary as they are highly likely to be altered following higher resolution or full coverage data assessment, or investigation with an ROV, however, they will remain in place until alterations have been formally agreed.

5.4.5 Although no TAEZs have been recommended at this stage, the mechanisms and methods for adding, altering or removing AEZs are equally applicable to TAEZs.

Establishing new archaeological exclusion zones

5.4.6 If new finds of archaeological importance are made during construction (or any subsequent stage of the project), they may be subject to the implementation of additional AEZs. Establishment of new AEZs may occur where additional data of the area is collected and archaeologically reviewed or where activities such as ROV UXO investigations identify additional features.

5.4.7 All finds of archaeological material will be reported to the Retained Archaeologist/Nominated Contact by the Construction Contractor(s), in accordance with the PAD (see Section 5.8 and Appendix A). The Retained Archaeologist will inform the Archaeological Curator(s) and the Applicant of all reports.

5.4.8 All activities that may affect the seabed in the vicinity of any find will cease until archaeological advice has been sought and received and, if necessary, an archaeological inspection of the material and site has taken place.

5.4.9 The Archaeological Curator will be consulted by the Retained Archaeologist on the need for and the design (position, extent) and implementation of any new AEZs.

Altering Archaeological Exclusion Zones

5.4.10 AEZs may be altered (enlarged, reduced, moved or removed) as a result of the results of future geophysical or ROV surveys and/or archaeological field evaluation. Archaeological field evaluation may include suitable high-resolution marine geophysical survey and/or survey by diver or ROV.

5.4.11 The alteration of AEZs will only be undertaken following consultation with the Archaeological Curator. Following alteration, a new plan giving details of the revised AEZs will be drawn up for the Applicant by the Retained Archaeologist and issued by the Applicant to its Construction Contractor(s) and onboard vessel representatives.

Monitoring Archaeological Exclusion Zones

5.4.12 The effectiveness of the AEZs and TAEZs (as implemented) will be monitored by regular review by the Retained Archaeologist of vessel track plots and anchor spots supplied by the Applicant. This data will be reviewed monthly by the retained archaeologist, at a minimum.

5.4.13 Should a breach of an AEZ be suspected, this will be resolved by further investigation, which may include carrying out a geophysical or diver/ROV survey of the area thought to be affected.

5.4.14 On completion of the construction phase, the Retained Archaeologist will compile a report on the effectiveness of the AEZs, any alterations to them and the results of monitoring.

5.5 Areas of Archaeological Potential

5.5.1 An Area of Archaeological Potential (AAP) serves to highlight the potential for material of archaeological interest to be identified in an area, following the collection of higher resolution or denser geophysical survey data. These could originate, for example, from the identification of a high concentration of magnetic anomalies, where the positions cannot be determined and with no correlating seabed feature. An AAP by itself carries no formal mitigation, i.e. an exclusion zone.

5.5.2 One AAP is recommended within the Offshore Development Area, covering the area between c. 8.5 km and 12.5 km from shore (Figure 5). The AAP is recommended to highlight the increased density of magnetic anomalies within this area (Figure 4) and associated increased potential to identify material of archaeological interest to here. Due to the wide spacing of the magnetometer data, there should be a general awareness across the Offshore Development Area that, following the collection of denser data, it is highly likely that additional anomalies of potential archaeological interest will be identified.

5.6 Archaeological monitoring

5.6.1 The following Section sets out methods for monitoring, should this be required.

Marine or intertidal watching brief

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

5.6.3 If a watching brief is required, it would be conducted by a suitably qualified and experienced marine archaeologist, in line with the CifA *Standard for archaeological monitoring and recording* (2023b) and *Universal guidance for archaeological monitoring and recording* (2023c). A detailed method statement would also be produced and approved by the Archaeological Curator before any watching brief activities are undertaken.

Watching brief methods

5.6.4 Where archaeological watching briefs are necessary, a detailed method statement for the proposed works will be produced and agreed with the Archaeological Curators prior to any watching brief activities taking place. All watching briefs will be conducted in line CifA's *Standard for archaeological monitoring and recording* (2023b) and *Universal guidance for archaeological monitoring and recording* (2023c).

5.6.5 Excavated surfaces and up-cast material will be inspected by the Archaeological Contractor. Any standing section of trench edge will be inspected by the Archaeological Contractor, where safe to do so.

5.6.6 Archaeological features or structures will be examined and/or excavated. A sufficient sample of each layer/feature type will be investigated to elucidate the date, character, relationships and function of the feature/structure. Development activities will include provision for sampling of features and deposits 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.

5.6.7 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. Any finds will be collected and allocated a record number and their position will be logged.

5.6.8 Suitable time will be allowed and resources made available within the construction programme for each such intervention.

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

Recording and reporting

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

5.6.11 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.

5.6.12 Positions will be related to a single, and agreed, Coordinate Reference System (CRS), typically this will be either WGS 1984 UTM Zone 30N or ETRS89 UTM Zone 30N.

5.6.13 The archaeological results will be compiled in a report by the Archaeological Contractor, in accordance with the requirements outlined in *Standard for archaeological monitoring and recording* (CifA, 2023b) and *Universal guidance for archaeological monitoring and recording* (CifA, 2023c) and in accordance with reporting procedures set out in Section 7.2.

5.7 General archaeological practices

5.7.1 During seabed preparation, construction and future activities associated with the Offshore Development, archaeological finds and deposits may be encountered and records may need to be produced. This situation may arise under various circumstances, for example, during watching brief activities. However, where it does arise, the following general methods will be employed.

Survey and recording

5.7.2 All finds and seabed archaeological deposits will be recorded using a *pro forma* recording system and a running matrix of assigned contexts will be maintained for each site.

5.7.3 A full photographic record will be maintained using video and digital stills photography. The photographic record will illustrate both the detail and the general context of the principal features, finds excavated and the site as a whole.

Positioning

5.7.4 Surveys will be carried out to a single, and agreed, Coordinate Reference System (CRS), typically this will be either WGS84 UTM Zone 30N or ETRS89 UTM Zone 30N.

Finds and conservation

5.7.5 Objects relating to human exploitation of the area that may be identified during the Offshore Development will be recovered by the Archaeological Contractor or recorded, where recovery is impracticable. All finds will be recorded by context and significant objects ('special finds') in three dimensions using a sequence of unique numbers.

5.7.6 Finds and other items of archaeological interest recovered offshore during investigation are the property of the Crown Estate Scotland as the landowner, with the exception of all human remains, items that are 'treasure' for the purposes of the Treasure Trove system (relevant in the intertidal zone) and 'wreck' for the purposes of the Merchant Shipping Act 1995. The Applicant will seek permission from the landowner to donate finds to an appropriate museum service prior to depositing the archive.

5.7.7 In the event of the discovery of items that fall under the Treasure Trove system, the Contractor will immediately notify the Retained Archaeologist, who will notify the District Coroner within 14 days. The Applicant and the Archaeological Curator will be notified as soon as possible. Items

falling under the Treasure Trove system will be removed from the site by the Archaeological Contractor and stored in a secure location, pending a decision by the Coroner.

5.7.8 Subject to these legal requirements and to the agreement reached with the museum regarding selection, retention and disposal of material, the Archaeological Contractor will retain all recovered objects unless they are undoubtedly of modern or recent origin. The presence of modern objects will be noted on context records. In these circumstances, sufficient material will be retained to elucidate the date and function of the deposit from which it was recovered.

5.7.9 Any finds and environmental samples will be processed according to professional standards for finds analysis, environmental sampling and archive preparation and in accordance with the Chartered Institute of Archaeologists' (CifA) *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (CifA, 2014a) and *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (2014b).

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

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

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

Human remains

5.7.13 In the event of the discovery of any confirmed human remains, the Construction Contractor or Archaeological Contractor will immediately inform the Retained Archaeologist. The Retained Archaeologist will inform the Applicant, the Archaeological Curator, and where appropriate the Coroner and the police.

5.7.14 It is proposed that any such remains will be left *in situ* until the Applicant, the Coroner and the Archaeological Curator have been informed. Where development will unavoidably result in disturbance, remains will be fully recorded, excavated and removed from the site subject to compliance with the relevant Ministry of Justice Licence for such activities, which will be obtained by the Retained Archaeologist.

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

5.8 Protocol for reporting finds of archaeological interest

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

5.8.2 The protocol will largely follow the format laid down in the document *PAD: Offshore Renewables Projects* (The Crown Estate, 2014). The Retained Archaeologist will operate to administer the Protocol for Archaeological Discoveries (PAD), provide initial advice to the Applicant and will liaise with the Archaeological Curators, as necessary. The details of the PAD, including key roles and communication steps, are set out in Appendix A.

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

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

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

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

5.8.7 At the end of the construction phase, the Retained Archaeologist will prepare a report on the results of the PAD. The results will be included in the final archaeological report in the section covering maritime sites and finds within the area affected by the development.

5.9 Crashed aircraft procedures

5.9.1 Volume A.3, Chapter 17: Marine Archaeology and Cultural Heritage and Volume ER.A.4, Annex 17.3: Marine Archaeology Technical Report identified a low potential for remains of crashed aircraft to occur within the Offshore Development Area. This Section sets out the specific procedures to be followed if remains of an aircraft are identified.

5.9.2 Most 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 *Collaborative Offshore Wind Research into the Environment (COWRIE) Historic Environment Guidance* (Wessex Archaeology, 2007), *Draft Interim Guidance on the use of the Protocol for Reporting Finds of Archaeological Interest in relation to Aircraft Crash Sites at Sea* (Wessex

Archaeology, 2008) and *Military Aircraft Crash Sites: Archaeological guidance on their significance and future management* (English Heritage, 2002).

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

5.9.4 Any subsequent actions will be guided by *Crashed Military Aircraft of Historical Interest: Licensing of Excavations in the UK – Guidance Notes for Recovery Groups* (MoD and SPVA, 2007) and by advice received from the 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*.

6.0 Methods for archaeological involvement in further work

6.1 Introduction

6.1.1 Archaeological involvement in further work is a key component in the ongoing process of assessing known and potential archaeological remains within the Offshore Development Area, to ensure robust and proportionate mitigation for heritage assets which may be impacted by the development.

6.1.2 A detailed method statement will be produced by the Retained Archaeologist, for agreement with and approval by the Applicant and the Archaeological Curator(s) in advance of each archaeological element discussed below. **Approval by the Archaeological Curator(s) will be assumed if no response is received within 30 working days of submission of individual method statements**. Overviews of methods are given below. These methods are in line with best practice guidance, set out within *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects* (The Crown Estate, 2021)

6.2 Further surveys requiring archaeological involvement

6.2.1 Further surveys requiring archaeological involvement include:

- geophysical survey – (in particular within the Nearshore ECC, though with other additional datasets also requiring assessment) requiring archaeological assessment of the survey dataset;
- diver/ROV obstruction surveys - requiring archaeological assessment of the survey dataset (video and positional data); and
- geotechnical investigations - requiring geoarchaeological assessment and, where necessary, analysis, following the staged approach set out below.

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

6.3 Planning surveys

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

- the available details on previously identified sites and/or anomalies and areas of heightened archaeological potential;
- the archaeological potential of areas where no existing sites and/or anomalies are yet known;

- the equipment, equipment settings, survey methodology(s) and data collection points that will optimise the recovery of archaeological information; and
- the requirements for data analysis, interpretation and archiving.

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

- altering vibrocore/borehole positions in order to maximise the potential for the collection of archaeological data;
- 'boxing' wreck sites, to provide the best possible images and positional data; and/or
- altering grab sample positions to maximise the potential for the collection of archaeological data.

6.4 Fieldwork

6.4.1 Where further survey work has as one of its objectives the ensonification of previously identified sites and/or anomalies to alter or remove an AEZ, the Applicant will make provision for a suitably qualified Archaeological Geophysical Contractor (which may be the Retained Archaeologist) to be available to provide advice and input into the survey and as the survey is ongoing. In some cases, this may include the presence of the Retained Archaeologist on the vessel alongside the vessel crew or, in most cases, this advice may be given remotely. In all cases, the archaeologist will ensure that the best possible data is collected for those anomalies subject to review.

6.5 Archaeological assessment of marine geophysical survey data

6.5.1 A data gap currently exists within the coverage of geophysical survey data covering the areas of impacts within the Offshore Development Area (see Paragraph 1.1.2). The Salamander Project has therefore made a commitment to collection of full coverage survey data, with specification reviewed by a competent archaeologist (covering the area of proposed impacts), prior to any impacts taking place (Commitment Ref: Co2). This data will be archaeologically assessed and recommendations for mitigation, including any necessary AEZs, will be made.

6.5.2 Additionally, new marine geophysical data that covers areas of development impact and AEZs will be subject to analysis by a suitably qualified Archaeological Geophysical Contractor (the Retained Archaeologist, if suitable). Any such assessment will be preceded by a method statement which will set out in detail the methods to be used, along with the aims and objectives of the work. The method statement will be submitted to the Archaeological Curator(s) prior to the work being conducted. **Approval by the Archaeological Curator(s) will be assumed if no response is received within 30 working days of submission of individual method statements**.

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

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

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

6.5.6 Archaeological interpretation may include:

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

6.5.7 An example of the criteria for assessing the archaeological potential of contacts is set out in Table 6, below.

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

Table 6: MSDS Marine criteria for the assessment of potential.

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

6.6 Archaeological assessment of diver/ROV survey data

6.6.1 Seabed photography and video footage will be subject to archaeological assessment and analysis by a suitably qualified Archaeological Contractor. Any such assessment will be

preceded by a method statement which will set out in detail the methods to be used, along with the aims and objectives of the work. The method statement will be submitted to the Archaeological Curators prior to the work being conducted. **Approval by the Archaeological Curators will be assumed if no response is received within 30 working days of submission of individual method statements**.

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

6.6.3 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;
- the provision of clear guidance on the types of sites and finds that are to be reported and recorded;
- wherever possible, input into the scope of works to include potential archaeological sites/AEZs where more detailed mitigation planning is required; and
- other specific advice will be given depending on the nature and purpose of the investigations. All such areas would be outlined within the method statement for the work.

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

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

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

6.6.7 The report will be forwarded to the Retained Archaeologist, who will submit it to the Applicant and the Archaeological Curators for a decision on the scope of any further work where required.

6.7 Geoarchaeological assessment of geotechnical data

6.7.1 The aim of the archaeological assessment of geotechnical data, as set out within COWRIE's *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (Gribble & Leather, 2011), is to:

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

6.7.2 In line with these aims and the COWRIE guidance (Gribble & Leather, 2011), new geotechnical surveys will be subject to archaeological input. Following best practice guidance this input should begin prior to core collection and should proceed to a staged process of assessment and analysis (The Crown Estate, 2021).

6.7.3 Early input should seek to determine methods and specifications for geotechnical sampling (e.g. vibrocores, boreholes, etc.) and engagement with the Applicant and their geotechnical team should aim to find ways to ensure archaeological aims and sampling can be conducted alongside any other requirements. Following these discussions, a method statement for core collection, transport, retention and storage should be produced, ensuring that cores are stored in a way which facilitates later assessment or analysis, if required. This method statement may also include methods for Stages 1 and 2 of the geoarchaeological assessment (see below).

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

6.7.5 It is recommended that collected geotechnical cores undergo a staged program of geoarchaeological assessment and analysis, as the primary means of ground-truthing the potential identified in this report and of mitigating impacts to remains. In brief, the process is as follows:

- Stage 1: Geoarchaeological review of core logs. This stage involves a desk-based assessment of the geotechnical core logs performed by a professional geoarchaeologist to determine which cores may be of interest. The selected cores will then be recommended for further study (Stage 2). Stage 1 assessment requires all cores to be recorded such that sediments that may be of archaeological interest can be identified. The scope of any further work will be agreed by the Applicant and the Archaeological Curator before proceeding to the next stage of assessment. If no further work is recommended a final report will be produced by the Archaeological Contractor;
- Stage 2: Geoarchaeological recording. This stage involves further study of the cores that may be of archaeological interest identified in Stage 1 to identify archaeological potential. The cores will be physically assessed by a geoarchaeologist who will confirm the sediments present within the cores and determine their archaeological potential and make recommendations for any suitable cores to be assessed further (Stage 3). At this point a report will be produced presenting the results of the Stage 1 and 2 analyses, recommending further study if necessary, and methodologies for any further work. The scope of further

work will be agreed by the Applicant and the Archaeological Curator. If no further work is recommended, a final report will be produced by the Archaeological Contractor;

- Stage 3: Geoarchaeological assessment. This stage involves taking samples from the cores with archaeological potential identified in Stage 2. The samples will be analysed to determine the age and the value surviving paleoenvironmental material contained within the samples. The aims for the palaeoenvironmental analysis included establishing the preservation, diversity, and quantity of palaeoenvironmental material for the purpose of better characterising its origin environment. Any suitable material can be recommended for further study (Stage 4) if necessary. A report for the results of the Stage 3 analysis will be produced, it will also outline whether further analysis is necessary or will state if no further work is recommended; and
- Stages 4 and 5: Geoarchaeological analysis and publication. This stage involves further, more detailed analysis of core samples. A report will be produced after this Stage including the results of all previous work, core location maps, sediment sequences, 2D and 3D images of the cores where necessary. The report will discuss the interpretation of palaeoenvironments in detail based on analysis of the cores and present all relevant information gathered during the desk-based assessments. The work will be undertaken to publication standard. The report will be forwarded to the Retained Archaeologist, who will submit it to the Applicant and the Archaeological Curator.

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

6.7.7 This geoarchaeological assessment and analysis should aim to deliver conclusions on the prehistoric archaeological and palaeoenvironmental remains within the area. Further mitigation may be required based on the results of this assessment. The geoarchaeological work should follow guidance set out within COWRIE's *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector* (Gribble & Leather, 2011).

6.7.8 The use of an appropriate protocol for archaeological discoveries, such as the *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate, 2014), also provides mitigation for prehistoric and palaeoenvironmental remains.

7.0 Activities subsequent to investigations

7.1 OASIS V

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

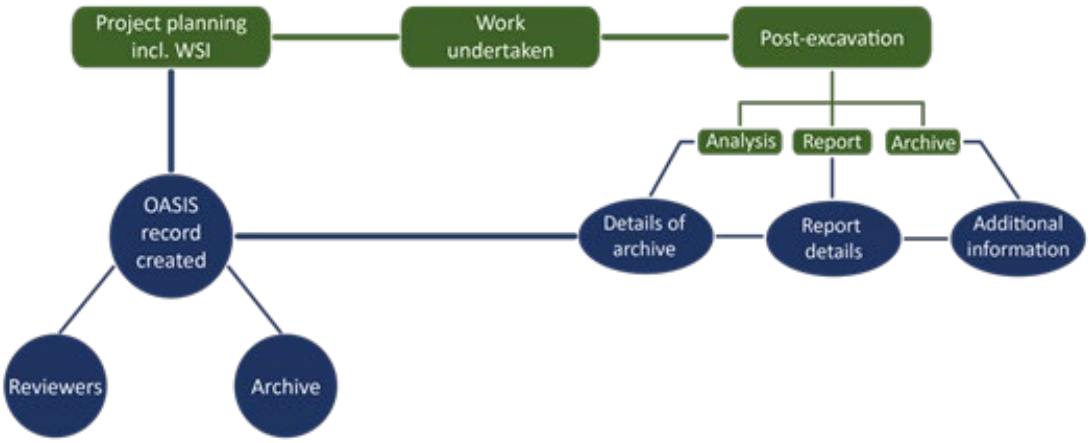

Figure 7: OASIS V procedure and standard archaeological workflow.

7.1.2 In contrast to previous iterations of OASIS, OASIS V is a new, flexible system that is kept live throughout the course of a project. An overview of the new system is set out in Figure 7. The new system recommends that an overarching OASIS record be established at project inception (for example on receipt of marine licenses and production of a WSI).

7.1.3 An OASIS record will therefore be set up following consent, to notify the relevant authorities of future work that is taking place. The Applicant must then ensure that an archaeological report is submitted to MD-LOT, HES and (if the work is within the intertidal zone) ACAS following completion of any survey and subsequent investigation. The contents of this report must be agreed and accepted by the Archaeological Curator(s) and MD-LOT. The Applicant must then ensure that a copy of the agreed archaeological report is submitted through the OASIS form within 2 weeks of acceptance by the relevant Archaeological Curators and MD-LOT. Sign off on the OASIS record will be by HES, who are responsible for administering the OASIS reporting system. The Applicant should notify MD-LOT that the OASIS report has been submitted within 2 weeks of the submission.

7.2 Reports

7.2.1 Reports should be prepared in accordance with the guidance provided in the relevant CIfA Standard and Guidance documents (see http://www.archaeologists.net/codes/cifa) and with reference to any other activity or analysis specific guidance. Reports will also satisfy all requirements set out within the relevant method statement covering the work package.

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

7.2.3 If little of significance is found during construction, a final report on the investigative work will be prepared by the Archaeological Contractor within six weeks of completion of all construction.

7.2.4 If significant archaeological sites and finds are recorded, the final report will be preceded by the submission to the Retained Archaeologist by the Archaeological Contractor(s) of investigation reports following the completion of fieldwork.

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

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

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

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

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

7.2.9 The Applicant will provide a digital (pdf) copy of each report to the Archaeological Curators, and MD-LOT (as appropriate), following survey completion.

7.2.10 Decisions regarding the level of post-excavation work, if required, will be taken following submission of investigation reports and consultation by the Applicant and the Retained Archaeologist with the Archaeological Curators.

7.2.11 Following the production and acceptance of archaeological reports, these will be deposited with the relevant repositories by submitting an OASIS form with a digital copy of the report.

7.3 Publication

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

7.4 Archives

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

- Brown, D. (2011). *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation*. Archaeological Archives Forum;
- CIfA. (2020c). *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives*; and
- The Crown Estate. (2021). *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects* (Section 13.5: Archiving).

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

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

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

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

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

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

7.4.8 On completion of the scheme, an OASIS form will be produced and copies of all archaeological reports will be attached as data files. Notification of the completion of the OASIS form will be sent to Archaeological Curators and MD-LOT (where appropriate).

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

8.0 References

Admiralty Maritime Data Solutions. (2009). *HI 1155 Todhead Point to Bosies Bank Blk4 4m SB*.

Archaeological Data Service (ADS). (2023). *Digital Archiving: Guides to Good Practice*. Available at: https://archaeologydataservice.ac.uk/help-guidance/guides-to-good-practice/ Accessed on: 10 March 2023.

Blinkhorn, E. and Milner, N. (2014). *Mesolithic Research and Conservation Framework of England*. York: English Heritage.

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

Chartered Institute for Archaeologists (CIfA). (2014, updated 2020). *Standard and Guidance for Historic Environment Desk Based Assessment*. Reading: CIfA.

Chartered Institute for Archaeologists. (2014, updated 2022). *Code of Conduct*. Reading: CIfA.

Chartered Institute for Archaeologists. (2014a). *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials*. Reading: CIfA.

Chartered Institute for Archaeologists. (2014b). *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives*. Reading: CIfA.

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

Chartered Institute for Archaeologists. (2023b). *Standard for archaeological monitoring and recording*. Reading: CIfA.

Chartered Institute for Archaeologists. (2023c). *Universal guidance for archaeological monitoring and recording*. Reading: CIfA.

Collaborative Offshore Wind Research Into The Environment (COWRIE). (2007). *Historic Environment Guidance for the Offshore Renewable Energy Sector*. COWRIE Ltd.

English Heritage (now Historic England). (2013). *Marine Geophysics Data Acquisition, Processing and Interpretation, Guidance Notes*. Swindon: English Heritage.

English Heritage. (2008a). *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment*. Swindon: English Heritage.

English Heritage. (2008b). *Research and Conservation Framework for the British Palaeolithic*. Swindon: English Heritage.

English Heritage (2002). *Military Aircraft Crash Sites*. Swindon: English Heritage.

English Heritage (1998). *Identifying and Protecting Palaeolithic Remains*. Swindon: English Heritage.

Gribble, J. and Leather, S. (2011). *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector*. Emu and COWRIE Ltd.

Historic England (HE; formerly English Heritage). (2008). *Conservation Principles, Policies and Guidance*. Swindon: Historic England.

Historic England. (2015). *Digital Image Capture and File Storage Guidelines for Best Practice*. Swindon: Historic England.

Historic Environment Scotland (HES). (2019, updated 2020). *Designation Policy and Selection Guidance.* Edinburgh: Historic Environment Scotland.

Historic Environment Scotland. (2019, updated 2020). *Managing Change in the Historic Environment: Asset Management.* Edinburgh: Historic Environment Scotland.

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

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

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

Peeters, H., Murphy, P. and Flemming, N. (eds.). (2009). *North Sea Prehistory Research and Management Framework*. Swindon: Historic England.

Ransley, J., Sturt, F., Dix, J.K., Adams, J. and Blue, L. (eds.). (2013). *People and the Sea. York: Council for British Archaeology*. https://doi.org/10.5284/1081826. Accessed 07/08/2023.

Scottish Archaeological Research Framework. No date. *Marine & Maritime.* *https://scarf.scot/thematic/scarf-marine-maritime-panel-report/* Accessed 09/08/2023.

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

The Crown Estate (2014). *Offshore Renewables Protocol for Archaeological Discoveries*. The Crown Estate.

The Crown Estate (2021). *Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects*. The Crown Estate.

The Scottish Government. (2011). *Planning Advice Note 2/2011: Planning and Archaeology.* Crown copyright.

The Scottish Government. (2013). *Planning Advice Note 1/2013: Environmental Impact Assessment*. Crown copyright.

The Scottish Government. (2017). *Planning Circular: The Town an Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (1st Edition 1.0).* Crown copyright.

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

Wessex Archaeology (2007). *COWRIE Historic Environment Guidance for the Offshore Renewable Energy Sector*. COWRIE Ltd.

Wessex Archaeology (2008). *Aircraft Crash Sites at Sea: A Scoping Study. Archaeological Desk-based Assessment*. Unpublished Report 66641.02.

Westerdahl, C. (1992) 'The maritime cultural landscape'. *The International Journal of Nautical Archaeology*. 21.I, pp. 5-14.

9.0 Appendix A: Protocol for reporting finds of archaeological interest

9.1 Purpose of the document

9.1.1 This appendix sets out the procedure for reporting discoveries of potential archaeological interest made during construction, operation, maintenance and decommissioning activities associated with the Offshore Development Area.

9.1.2 The aim of the protocol for reporting finds of archaeological interest is to reduce any adverse effects of the development upon the historic environment by enabling people working on the project to report their finds in a manner that is both convenient to their every-day work and effective regarding curatorial requirements.

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

9.2 Protocol details and version

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

9.3 Circumstances of discovery

9.3.1 This PAD addresses finds of archaeological interest made on the seabed, intertidal zone or on-board vessels during a wide range of activities associated with construction, operation, maintenance and decommissioning of the Offshore Development.

9.4 Scope of the protocol

9.4.1 The Applicant will employ a Retained Archaeologist to provide archaeological consultancy and to liaise with and report as appropriate to the Contractors, the Applicant and the Archaeological Curator.

9.5 Operations of the protocol

Introduction

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

9.5.2 The Protocol anticipates that discoveries made by Project Staff are reported to the Site Champion (e.g. Vessel Master or Site Foreman) on their vessel or site, who then reports to the Nominated Contact (the Retained Archaeologist is the recommended Nominated Contact).

9.5.3 The Retained Archaeologist will liaise with the Applicant and the Archaeological Curator, along with any additional relevant stakeholders depending on the nature and significance of the find,

and planned activities within the area. Additional mitigation may be recommended depending on the nature of the find.

Terms and roles

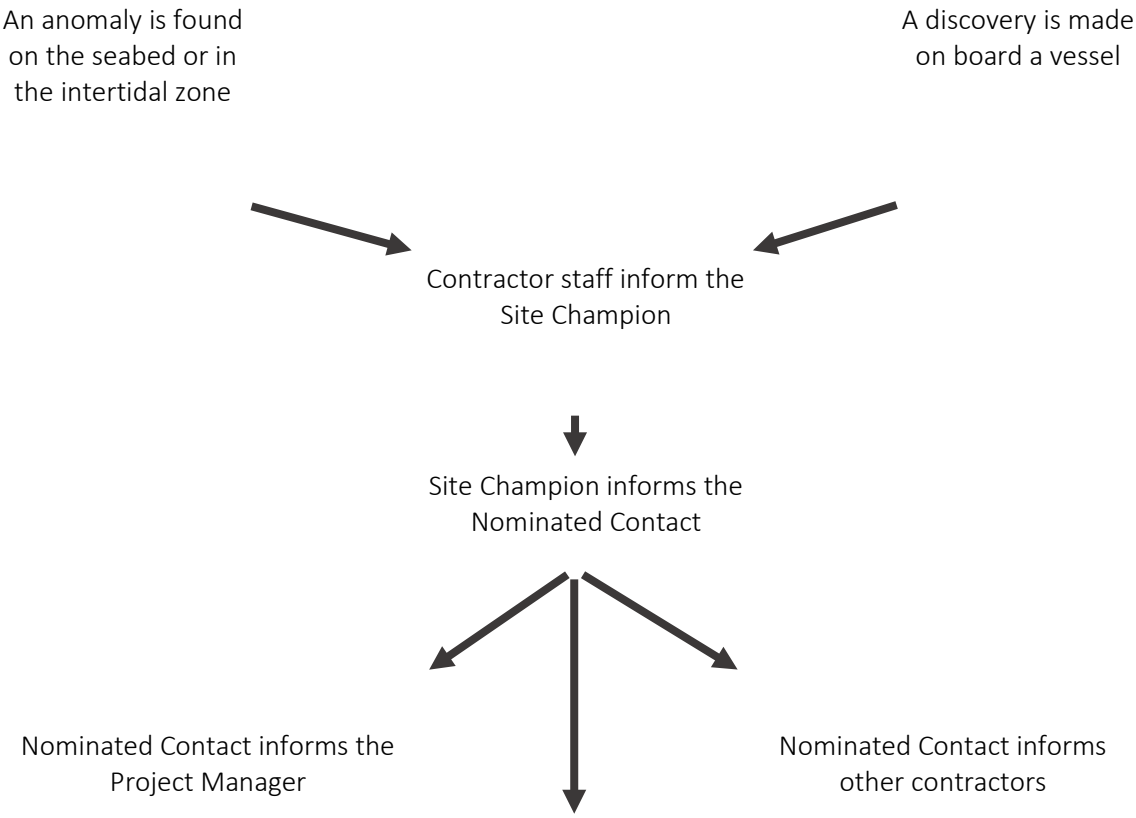

Figure 8: PAD process and roles.

9.5.4 A summary of the key roles and steps in the PAD process are set out in Figure 8.

9.5.5 On the vessel or site, the person responsible for reporting anomalies or finds will be the Site Champion. Anomalies or finds will be brought to the attention of the Site Champion by the Contractors or Project Staff. The Site Champion will inform the Nominated Contact (who can be the Retained Archaeologist).

9.5.6 The Applicant's Retained Archaeologist can provide specialist advice on finds identification, assessments of significance, and technical support services relating to the mitigation of the impacts of the project on the historic environment[1].

[1] Note, the Crown Estate (2014) Protocol for Archaeological Discoveries includes an additional step whereby the report is passed to the Implementation Service who provide additional support on identification and input into mitigation. This Service is run by an archaeological contractor. The Retained Archaeologist, who has access to all project datasets and typically has a strong understanding of the archaeological potential of the area, along with specialists in maritime archaeology, is best placed to give this advice. As such there is no need for the inclusion

9.5.7 The Retained Archaeologist, along with the Applicant and their contractors, shall draw to the attention of all relevant staff the potential for archaeological material to be found during survey and inform them of the possible importance of such finds.

9.5.8 Personnel working on the project will be briefed on the Protocol for Archaeological Discoveries and copies of this Protocol will be available onboard the survey vessels and on all sites.

Legal implications

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

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

9.6 Guidelines for identifying and handling finds

9.6.1 The following guidelines can be used to identify any discovered material and must be referred to when planning appropriate handling and storage. Advice on the identification of finds has been provided following the accepted advice provided by The Crown Estate in their Protocol for Archaeological Discoveries (2014). Further advice on finds can be sought from the Retained Archaeologist.

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

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

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

9.6.5 General advice for finds handling and storage is:

- Handle all finds carefully;
- Photograph all sides of a find with a scale;
- Take close up photographs of any markings, glazing, or imagery;
- Keep finds wet and ensure the water is changed regularly if biological growth is detected;
- Keep finds cool and ideally in the dark;

of the additional step of corresponding with the Implementation Service, who do not have access to the up-to-date project data. They will therefore not be included within the Protocol for Archaeological Discoveries implemented during this project. The 2021 Crown Estate guidance on Archaeological Written Schemes of Investigation, which post-dates the 2014 PAD guidance, indicates that although the 2014 guidance sets out one protocol, others can also be used and further states that the 2014 guidance can be used to 'support the development of a protocol for any OWF project' (Crown Estate, 2014: 42). The approach set out here is therefore in line with existing guidance.

- ⊕ Keep finds in protective containers where possible;
- ⊕ Label any finds;
- ⊕ Follow the information below on finds storage and contact the Retained Archaeologist if further advice is required;
- ⊗ Do not attempt to clean the find by removing any sediment build up, concretion, or marine life;
- ⊗ Do not allow finds to dry out; and
- ⊗ Do not handle finds more than necessary.

Metal

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

Iron and steel

9.6.7 The potential range and date of iron and steel objects is so wide that it is difficult to provide general guidance. In broad terms, iron and steel objects which are covered by a thick amorphous concrete-like coating ('concretion') are likely to be of archaeological interest and should be reported. Pieces of metal sheet and structure may indicate a wreck and should be reported. Specific operational measures are likely to apply in respect of ordnance (cannonballs, bullets, shells) which should take precedence over archaeological requirements. However, discoveries of ordnance may be of archaeological interest, and they should be reported.

Other metals

9.6.8 Items made of thin, tinned or painted metal sheet are unlikely to be of archaeological interest. Aluminium objects may indicate aircraft wreckage from World War Two, especially if two or more pieces of aluminium are fixed together by rivets. All occurrences should be reported' and remains of this nature may be subject to the Protection of Military Remains Act 1986. 'Copper and copper alloy (bronze, brass) objects might indicate a wreck, or they may be very old. All occurrences should be reported. Precious metal objects and coins are definitely of archaeological interest because they are relatively easy to date. All occurrences should be reported (The Crown Estate 2014: 19).

Actions to take

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

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

9.6.11 Metals can sometimes be identified from the colour of their corrosion. Table 7 can be used to help identify the type of metal.

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

Table 7: Identification of metal corrosion.

Ceramics

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

Actions to take

9.6.13 Photograph finds with a scale, especially if they have any glazing or markings. Store in saltwater.

Ceramic building material

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

9.6.15 Bricks with modern proportions and v-shaped hollows ('frogs') are of no archaeological interest. Unfrogged, 'small', 'thin' or otherwise unusual bricks may date back to Medieval or even Roman times and should be reported (The Crown Estate, 2014: 19). Occurrences of tile should also be reported.

Actions to take

9.6.16 Photograph finds with a scale, especially if they have any glazing or markings on them. Store in saltwater.

Stone

9.6.17 Stone has been used by humans for thousands of years and is very durable underwater, making it a common find. There are different types of stone which can appear as artefacts, including quartz, limestone, marble, granite, obsidian, slate, sandstone and flint. Typical finds might

include ballast, anchors, millstones, building material, shot, carvings, tools, sculptures, whetstones, flint or stone tools and other personal items.

9.6.18 Small to medium size stones that are shaped, polished and/or pierced may be prehistoric axes. All occurrences should be reported. Objects such as axe heads or knife blades made from flint are likely to be of prehistoric date and should be reported. Large blocks of stone that have been pierced or shaped may have been used as anchors or weights for fishing nets. All occurrences should be reported. The recovery of numerous stones may indicate the ballast mound of a wreck, or a navigational cairn. All occurrences should be reported (The Crown Estate, 2014: 19).

Actions to take

9.6.19 Photograph with a scale and then store in water or wrap in soaked towelling.

Skeletal material and faunal remains

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

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

9.6.22 Objects made of bone (such as combs, harpoon points or decorative items) can be very old and are of archaeological interest. All occurrences should be reported (The Crown Estate, 2014: 19).

Actions to take

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

Wood

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

9.6.25 Light coloured wood, or wood that floats easily, is probably modern and is unlikely to be of archaeological interest. 'Roundwood' with bark (such as branches) is unlikely to be of archaeological interest, although it may provide paleo-environmental evidence. However, roundwood that has clearly been shaped or made into a point should be reported. Pieces of wood that have been shaped or jointed may be of archaeological interest, especially if fixed with wooden pegs, bolts or nails – all occurrences should be reported. Objects made of dark, waterlogged wood (such as bowls, handles, shafts, etc.) can be very old and are of archaeological interest. All occurrences should be reported (The Crown Estate, 2014: 19).

Actions to take

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

Peat and clay

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

9.6.28 Fine-grained sediments (such as silts and clays) are often found at the same places as peat. These fine-grained sediments also contain the microscopic remains that can provide information about past environments and sea level change. Any discoveries of such material would be of archaeological interest, and their occurrence should be reported (The Crown Estate, 2014: 20).

Actions to take

9.6.29 Any sediments collected should be stored in a sealed container with seawater and keep cool. Do not try to break apart the deposits.

Fibre and Textiles

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

Actions to take

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

Synthetics

9.6.32 In most cases, rubber, plastic, Bakelite and similar modern synthetic materials are not of archaeological interest and can be disregarded. One exception is where such materials are found in the same area as aluminium objects and structures, which may indicate aircraft wreckage. Such material should be reported (The Crown Estate, 2014: 14).

Actions to take

9.6.33 Do not bend or clean any plastic or rubber finds. Photograph the find with a scale and then store in seawater in a cool and dark area.

Resinous or mineral substances

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

Actions to take

9.6.35 These finds might appear stable, but if they are not stored properly, they may begin to deteriorate. Photograph a find with a scale and keep stored in seawater.

Glass

9.6.36 Glass finds may include bottles, beads and panes of glass from ship's windows. Unless obviously modern (beer bottles, etc.), glass finds should be reported, particularly where it occurs alongside other finds, as this may represent a wreck site.

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

Actions to take

9.6.38 Photograph with a scale before packing carefully to avoid breakage. Ensure it is covered in cool seawater in the dark.

10.0 Appendix B: Protocol for archaeological discoveries: preliminary record form

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