



# Technical Appendix 15.2

## Outline Written Scheme of Investigation (WSI) (Offshore)

Offshore EIA Report: Volume 2

This page is intentionally blank

# REPORT

## **Green Volt Offshore Windfarm**

Outline Written Scheme of Investigation (WSI)  
(Offshore)

Client: Green Volt Offshore Windfarm Ltd

Reference: PC2483-RHD-ZZ-XX-RP-Z-0022

Status: Final/01

Date: 18 January 2023

HASKONINGDHV UK LTD.

74/2 Commercial Quay  
Leith  
Commercial Street  
Edinburgh  
EH6 6LX  
Industry & Buildings  
VAT registration number: 792428892

+44 131 5550506 **T**  
info.edinburgh@uk.rhdhv.com **E**  
royalhaskoningdhv.com **W**

Document title: Green Volt Offshore Windfarm

Subtitle: Outline Written Scheme of Investigation (WSI) (Offshore)

Reference: PC2483-RHD-ZZ-XX-RP-Z-0022

Status: 01/Final

Date: 18 January 2023

Project name: Green Volt Offshore Windfarm

Project number: PC2483

Classification

Project related

*Unless otherwise agreed with the Client, no part of this document may be reproduced or made public or used for any purpose other than that for which the document was produced. HaskoningDHV UK Ltd. accepts no responsibility or liability whatsoever for this document other than towards the Client.*

*Please note: this document contains personal data of employees of HaskoningDHV UK Ltd.. Before publication or any other way of disclosing, consent needs to be obtained or this document needs to be anonymised, unless anonymisation of this document is prohibited by legislation.*

## Revision history

Revision	Date	Description	Prepared	Checked	Approved
1	03/05/2022	First Draft	GSP (Royal HaskoningDHV)	PP (Royal HaskoningDHV)	VC (Flotation Energy)
2	30/08/2022	Second Draft	GSP (Royal HaskoningDHV)	PP (Royal HaskoningDHV)	VC (Flotation Energy)
3	18/11/2022	Final for submission	GSP (Royal HaskoningDHV)	CM (Royal HaskoningDHV)	VC (Flotation Energy)

## Table of Contents

<b>Appendix 15.2: Offshore Outline Written Scheme of Investigation</b>	<b>1</b>
1.1 Introduction	1
1.2 Project Background	1
1.3 Baseline Summary of Offshore Archaeology and Cultural Heritage	3
1.4 Impact Assessment	11
1.5 Roles, Responsibilities and Communications	17
1.6 Methodology for Further Site Investigation	18
1.7 Delivery of Mitigation	23
1.8 Requirements for Monitoring	27
1.9 Archaeological Recording, Reporting, Data Management and Archiving	28
1.10 Protocol for Archaeological Discoveries (PAD)	31
1.11 References	33

## Table of Tables

Table 1-1: Data deliverables to MSDS Marine	4
Table 1-2: Summary of Previous Assessments	5
Table 1-3: Shallow Stratigraphy of the Study Area Identified by MSDS Marine	6
Table 1-4: MSDS Marine criteria for discriminating the relevance of identified seabed features with the Study Area	8
Table 1-5: Distribution of archaeological anomalies by potential	8
Table 1-6: Low potential anomaly categories as defined by MSDS Marine	8
Table 1-7: Distribution of heritage records across the Project areas	9
Table 1-8: Recorded wreck locations in the intertidal zone	10
Table 1-9: Summary of embedded mitigation	12
Table 1-10: Summary of Potential Impacts	14
Table 1-11: Recommended AEZ Within the Study Area.	24

## Appendices

Appendix 1-1 – Gazetteer of UKHO records
Appendix 1-2 – Gazetteer of CANMORE records
Appendix 1-3 – Gazetteer of Aberdeenshire HER records

## Acronyms

<b>Acronym</b>	<b>Description</b>
AEZ	Archaeological Exclusion Zone
ALARP	As Low As Reasonably Possible
APP	Areas of Archaeological Potential
BGS	British Geological Survey
CAD	Computer Aided Design
CifA	Chartered Institute of Archaeologists
ECR	Export Cable Route
EIA	Environmental Impact Assessment
ES	Environmental Statement
GIS	Geographic Information System
HDD	Horizontal Directional Drilling
HER	Historic Environment Record
HES	Historic Environment Scotland
HSC	Historic Seascape Character
JNAPC	Joint Nautical Archaeology Policy Committee
km	Kilometre
MAG	Magnetometer
MBES	Multibeam Echo Sounder/Bathymetry
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MS	Marine Scotland
MW	Megawatts
nm	Nautical mile
nT	nano Tesla

ORPAD	Offshore Renewables Protocol for Archaeological Discoveries
OSP	Offshore Substation Platform
OWL	Offshore Wind Ltd
PAD	Protocol for Archaeological Discoveries
ROV	Remote Operated Vehicle
SBES	Single Beam Echo Sounder
SBP	Sub-bottom Profiler
ScARF	Scottish Archaeological Research Framework
SSS	Side scan Sonar
TAEZ	Temporary Archaeological Exclusion Zone
TEZ	Temporary Exclusion Zone
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
WSI	Written Scheme of Investigation
WWII	World War II



## Glossary

<b>Aviation archaeology</b>	The remains of crashed aircraft and archaeological material associated with historic aviation activities.
<b>Geoarchaeology</b>	The application of earth science principles and techniques to the understanding of the archaeological record. Includes the study of soils and sediments and of natural physical processes that affect archaeological sites such as geomorphology, the formation of sites through geological processes and the effects on buried sites and artefacts.
<b>Glacial/interglacial</b>	A glacial period is a period of time within an ice age that is marked by colder temperatures and glacier advances. Interglacial correspond to periods of warmer climate between glacial periods. There are three main periods of glaciation within the last 1 million years, the Anglian, the Wolstonian and the Devensian which ended about 12,000 years ago. The Holocene period corresponds to the current interglacial.
<b>Historic seascape character (HSC)</b>	The attributes that contribute to the formation of the historic character of the seascape
<b>Horizontal directional drilling (HDD) zones</b>	The areas within the onshore cable route which would house HDD entry or exit points.
<b>Infield cables</b>	Cables which link the wind turbine generators to the offshore substation platform(s).
<b>Landfall</b>	The point at the coastline at which the offshore export cables are brought onshore, connecting, and connected to the onshore export cables
<b>Maritime archaeology</b>	The remains of boats and ships and archaeological material associated with prehistoric and historic maritime activities.
<b>Mesolithic</b>	10000 to 4000 BC The Middle Stone Age, falling between the Palaeolithic and Neolithic and marking the beginning of a move from a hunter gatherer society towards a food producing society.
<b>Offshore export cables</b>	The cables which would bring electricity from the offshore substation platform(s) to the Buzzard platform complex and to landfall.

<b>Offshore scoping area</b>	An area that encompasses all planned offshore infrastructure, including landfall options at both St Fergus South and NorthConnect Parallel locations, and allows sufficient room for receptor identification and environmental surveys. This has been refined following further site selection and consultation.
<b>Offshore substation platform</b>	A fixed structure located within the wind farm area, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
<b>Palaeoenvironmental analysis</b>	The study of sediments and the organic remains of plants and animals to reconstruct the environment of a past geological age.
<b>Palaeogeographic features</b>	Features seen within sub-bottom profiler data (buried) and multibeam bathymetry data (sea floor) interpreted as representing prehistoric physical landscape features such as former river channels (palaeochannels).
<b>Palaeolithic</b>	500000 to 10000 BC The Old Stone Age defined by the practice of hunting and gathering and the use of chipped flint tools. This period is usually divided into Lower, Middle and Upper Palaeolithic.
<b>Seabed features</b>	Features seen on the seafloor in the sidescan sonar or multibeam bathymetry data which are interpreted to represent heritage assets, or potential heritage assets. Also includes magnetic anomalies which may represent shallow buried ferrous material of archaeological interest.
<b>Seabed prehistory</b>	Archaeological remains on the seabed corresponding to the activities of prehistoric populations that may have inhabited what is now the seabed when sea levels were lower.
<b>Study Area</b>	Area where potential impacts from the project could occur, as defined for each individual EIA topic.
<b>The Applicant</b>	Green Volt Offshore Windfarm Ltd



This page is left intentionally blank.

## Appendix 15.2: Offshore Outline Written Scheme of Investigation

### 1.1 Introduction

1. Green Volt Offshore Windfarm Limited (hereafter referred to as 'the Applicant') is seeking consent to construct the Green Volt Offshore Windfarm (hereafter referred to as 'the Project'. In this instance the Project refers to the offshore elements of the Green Volt Offshore Windfarm only, up to Mean High Water Springs (MHWS)). The Project is a proposed floating offshore wind farm located 80 kilometre (km) northeast of the Aberdeenshire Coast in the North Sea, with an intended generating capacity of up to between 490 and 560 megawatts (MW).
2. The Project will comprise the floating offshore wind structures (wind turbines, floating substructures, anchor chains, anchors), as well as the offshore transmission infrastructure (offshore substation, inter array cables, export cables).
3. The Project's purpose is to generate and supply renewable electricity to enable the complete electrification of the offshore Buzzard oil and gas Platform Complex (Buzzard). With an operational target date of 2027, the Project will enable 300,000 tonnes of CO<sub>2</sub> per year to be mitigated from the electrification of oil and gas facilities.
4. The Project will be connected to the National Grid by an Offshore Export Cable Corridor which will make Landfall on the coastline near Peterhead in the northeast of Scotland. The Project aims to offset 500,000 tonnes CO<sub>2</sub> per year in total.
5. The **Offshore Scoping Report (Appendix 1.2 of the Offshore EIA Report)** was submitted to the Scottish Ministers who were generally content with the approach to the Environmental Impact Assessment (EIA) and the embedded mitigation measures outlined, as described in the **Scoping Opinion (Appendix 1.1 of the Offshore EIA Report)**. However, the Scottish Ministers did outline the requirement for a Written Scheme of Investigation (WSI) with a Protocol for Archaeological Discoveries (PAD) for the Project.
6. Therefore, this document comprises the **Offshore Outline Written Scheme of Investigation** including a PAD.

### 1.2 Project Background

#### 1.2.1 Purpose of this Document

7. This **Outline Offshore WSI** has been produced to set out the proposed approach to the archaeological mitigation measures and investigations to be undertaken post-consent associated with the Project.
8. This document is produced for a wide audience including:
  - Marine Scotland (MS);
  - Relevant heritage stakeholders including Historic Environment Scotland (HES) and Aberdeenshire Council Archaeology Service (ACAS);
  - The Green Volt project team;
  - Post-consent archaeological contractors; and

- Post-consent construction contractors.
9. The offshore infrastructure for the Project includes wind turbines, wind turbine moorings, offshore substation platform (OSP), inter-array cables and export cables from the wind farm site to Buzzard and to landfall.
  10. A Horizontal Directional Drilling (HDD) method will be used to install the export cables at the landfall. This will largely avoid interaction with the intertidal zone as boreholes pass beneath the beachfront.
  11. An updated, final Offshore WSI will be developed post-consent in consultation with HES and the AC Archaeology Service.

### 1.2.2 Project Study Area

12. Green Volt Offshore Windfarm is a proposed floating offshore wind farm located 80 km northeast of the Aberdeenshire Coast in the North Sea, with an intended generating capacity of up to 560MW. **Figure 1** presents the projects Study Area.
13. The Study Area for Offshore Archaeology and Cultural Heritage is defined as Offshore Development Area, comprising the Windfarm Site, the Buzzard Export Cable Corridor, the Landfall Export Cable Corridor, the NorthConnect Parallel and St Fergus South Landfall options and the intertidal zone at the landfall up to MHWS (see **Section 15.5.1** of **Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA report**).

### 1.2.3 Approach

14. This **Offshore Outline WSI** has been prepared in accordance with 'Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects' (The Crown Estate, 2021). This **Offshore Outline WSI**:
  - sets out the roles and respective responsibilities of the project team, contractors, and retained archaeologist and archaeological contractor(s) and formal lines of communication between the parties and with archaeological curator(s) (**Section 1.5**);
  - outlines the known and potential archaeological receptors that could be impacted by the Project (**Section 1.3** and **Section 1.4**);
  - outlines the agreed mitigation and archaeological actions that are to take place in various circumstances (**Section 1.4.1**);
  - sets out the importance of research frameworks in setting objectives that are delivered through realisation of the work (see below); and
  - provides summarised details on methodologies for these archaeological actions, which will be clarified in more detail in subsequent activity-specific method statements (**Section 1.6** and **Section 1.7**).
15. As an 'Outline' WSI, this document has been developed as part of the EIA process to set out the framework for the assumed mitigation that will be submitted alongside the application. Prior to further surveys taking place for the Project, a pre-commencement survey Draft WSI (in accordance with this **Offshore Outline WSI**) will be developed if required. This will be done in consultation with the archaeological curators (see **Section 1.5**) and agreed with the Regulator to ensure archaeological objectives are considered.

16. A final, agreed WSI (in accordance with the pre-commencement survey Draft WSI) will set out the overarching approach to survey and archaeological investigations agreed with the archaeological curators and the Regulator prior to pre-construction works commencing.
17. The Crown Estate document (The Crown Estate, 2021) sets out high level guidance on a range of archaeological methodologies that may be required in the production of WSIs. For each individual work package set out in **Section 1.6** and **Section 1.7**, account has been taken of these standard, high level methodologies. Each section sets out how they are relevant to the delivery of the Project and explains any necessary adaptations and amendments for agreement with HES.
18. Surveys and work packages specific archaeological objectives will be established on a case-by-case basis with reference to all relevant project datasets (and associated archaeological and geoarchaeological interpretations) and to other relevant research and investigations with specific reference to established research agendas. These include (but not limited to):
  - Scotland's Archaeology Strategy (Scotland Archaeology Strategy Committee, 2015);
  - Northeast Scotland Archaeological Research Framework (Aberdeenshire Council, 2013); and
  - Scottish Archaeological Research Framework (SCARF, 2012).
19. In demonstrating adherence to industry good practice, this Outline Offshore WSI also draws upon available archaeological guidance for offshore development including:
  - Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate 2014);
  - Chartered Institute for Archaeologists (CIfA) Code of Practice and Standards and Guidance (CIfA 2014a, 2014b, 2014c, 2014d);
  - Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather 2011);
  - Historic Environment Guidance for the Offshore Renewable Energy Sector Guidance (Wessex Archaeology 2007); and
  - Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee (JNAPC) 2006).

### 1.3 Baseline Summary of Offshore Archaeology and Cultural Heritage

#### 1.3.1 Summary of Assessment to Date

20. Geophysical survey data were collected across the Windfarm Site (116 km<sup>2</sup>) and 75 km of cable route by Gardline between 7<sup>th</sup> and 26<sup>th</sup> September 2021. Data for c.32 km of cable route from 12 nautical miles (nm) landward was collected by Hydrofix on 31<sup>st</sup> March 2022. No data were collected from shore to c.8.2 km on the St Fergus South Landfalls Export Cable Corridor, and from shore to 10.4 km on the NorthConnect Parallel Export Cable Corridor, this was due to restrictions from the local fishing community. Data collected for the Windfarm Site comprised:
  - Side Scan Sonar (SSS)
  - Magnetometer (MAG)
  - Single Beam Echo Sounder (SBES)
  - Multibeam Echo Sounder/Bathymetry (MBES)

21. Data collected for the Offshore Export Cable Corridor comprised to 12 nm
  - Side Scan Sonar (SSS)
  - Multibeam Echo Sounder (MBES)
  - Magnetometer (MAG)
22. Data collected landward of 12 nautical miles consisted only of MBES. This was because a European Protected Species (EPS) licence for mammal disturbance could not be obtained within the Project timescales. Further data (SSS, MAG, MBES & Sub-bottom Profiler (SBP)) will be obtained to characterise this area post consent and once relevant licences have been obtained. Full details of the technical specifications of the acquired geophysical data can be found in **Section 4 of Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**.
23. MSDS Marine were appointed by Royal HaskoningDHV to undertake the archaeological assessment of geophysical and hydrographic survey data. MSDS Marine are a specialist marine and coastal contractor with offices in Derbyshire (England) and Skye (Scotland) and with extensive experience in this field.
24. Geophysical survey data was provided to MSDS Marine firstly to audit the data for its quality and suitability for archaeological purposes and for archaeological assessment. A summary of deliverables provided to MSDS Marine is provided in **Table 1-1** below.

Table 1-1: Data deliverables to MSDS Marine

Sensor	Deliverables
Sidescan Sonar (SSS)	Navigation corrected, unprocessed high and low frequency lines (.xtf) Georeferenced mosaic at 2 m resolution (.tif) Seabed features (.csv)
Multibeam Bathymetry/Echo Sounder (MBES)	Navigation corrected, unprocessed points (.pts) Georeferenced mosaic at 2 m resolution (.tif) Seabed features (.csv)
Sub-bottom Profiler (SBP)	Navigation corrected, unprocessed lines (.sgy) Navigation corrected, processed lines (.sgy) Horizon grids and unit interpretations (.grd / .shp)
Magnetometer (MAG)	Navigation corrected, unprocessed lines (.txt) Magnetic anomalies (.csv)

### 1.3.2 Seabed Prehistory

25. At various times in the past the North Sea has been exposed as dry land including the development site which was dry land until sometime after c.16,000 BC (World Ocean Review, 2017). This is due to sea level falls driven by climate change. Buried sediments related to this may contain, not only direct archaeological evidence of the human occupation of the area, but also palaeo-environmental data. This can be used to develop an understanding of the wider natural environment within which early humans lived.
26. A range of Palaeolithic stone artefacts as well as Pleistocene faunal remains have been recovered in the North Sea. However, these have largely been found further south, from the Brown Ridge area and Dogger Bank, with the Scottish assemblage limited to two worked flints. One of these was obtained from a vibrocore (number 60+01/46) acquired as part of a British Geological Survey (BGS) programme on the United Kingdom (UK) shelf, some 150 km northeast off Lerwick, near Viking Bank further north of the development site (ScARF, 2012). The other was recovered from a core taken from a depression of muddy sand off Halibut Bank (Flemming 2002).



27. A wide range of fossils have been identified in the Scottish North Sea (ScARF, 2012) including:
- reindeer
  - bison
  - musk-ox
  - woolly mammoth
  - red deer
  - woolly rhino
28. In recent years, the archaeological assessment of marine geophysical and geotechnical data acquired for constructed and planned projects in the North Sea has led to a much greater understanding of the potential for prehistoric, maritime and aviation archaeology. For example, assessment undertaken for Moray East Offshore Windfarm demonstrated the presence of palaeo-landscape features and sub-seabed deposits of palaeo-environmental interest. Similarly, assessment undertaken for the Hywind, and Beatrice Offshore Windfarms identified a lack of such features, helping to define where such features are less likely to be present.
29. There are no known seabed prehistory sites within the Offshore Development Area.
30. The potential for prehistoric sites to be present within the Offshore Development Area, either exposed on or buried within the seabed, is primarily associated with surviving terrestrial features and deposits corresponding to times when sea levels were lower. As such, prehistoric hominin populations may have inhabited what is now the seabed. Archaeological material may also be present within secondary contexts, as isolated finds within deposits comprising material from terrestrial phases that may have been reworked by marine or glacial processes, for example.
31. The shallow geology of the Study Area has been established from SBP data interpreted by MSDS Marine and other available studies which contribute to the understanding of the palaeolandscape and prehistoric archaeological potential within the area. This comprises a series of Pleistocene and Holocene sediments deposited in a in a range of environments, from terrestrial to marine. This potential is discussed in detail **Appendix 15.1 of Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report** and is summarised below. Account has also been taken of previous geoarchaeological assessments undertaken within the Study Area and in its vicinity. Previous assessments are summarised **Table 1-2** below.

Table 1-2: Summary of Previous Assessments

Date	Site	Survey Details	Reference
2006	Ettrick	Environmental and geophysical data collection and included grab sampling, seabed photography and the collection of vibrocores, in addition to SSS, MBES and SBP data.	Fugro. (2006). Rig Site Survey UKCS 20/2a & 20/3a Ettrick Drill Sites Report No.: 68 - 8713.2 Volume II: Environmental Baseline Survey
2007	Blackbird	Survey to identify obstructions, geology, geohazards and environmental conditions, including collection of camera footage, grab sampling and coring. Geophysical survey data were also collected including SBP, echo sounder, MBES, SSS, 2D High Resolution Seismic (HRS) data.	Gardline. (2007). Nexen Petroleum U.K. Ltd Site Survey UKCS 20/2a (Blackbird) January 2007 Survey Report
2008	Ettrick to Blackbird	Geophysical and environmental survey including SSS, MBES, pinger SBP, MAG data.	Fugro (2008). Pipeline Route Survey UKCS Block 20/2a Ettrick to Blackbird
2009	Blackbird	Rig site survey involving the collection of single beam and MBES, SSS, pinger and boomer (SBP) data, high resolution seismic, environmental camera, and grab data.	Gardline. (2009). Nexen Petroleum UK Ltd UKCS Block 20/2a Blackbird Site Survey



Date	Site	Survey Details	Reference
2010	Blackbird	Debris clearance accompanied by geophysical survey including single and MBES, SSS and pinger SBP.	Fugro. (2010). Debris Clearance Survey UKCS Block 20/2a Proposed Locations at Blackbird
2011	Blackbird	Including collection of single beam echo sounder, MBES, pinger SBP, SSS, MAG 2DHR multichannel seismic data, seabed sampling.	Fugro. (2011). Rig Site Survey UKCS Block 20/02 Proposed Location 20/02 Blackbird
2011	Ettrick	SSS data collection of debris identified within Ettrick site.	Fugro. (2011). Debris Box-In Survey, UKCS 20/02 Ettrick Wi Debris Memo
2013	Ettrick	Surveys associated with revised DCM location and including the collection of 2DHR infill lines and reporting on extensive 2DHR collected in 2005 and 2011, 3D seismic data, and collection of four CPTs.	RPS. (2013). Independent Geohazard Assessment: Ettrick DCM Revised Well Location UKCS, BLOCK 20/2a & 20/3a
2013	Ettrick	Habitat survey involving geophysical survey (SSS, MBES, SBP), grab samples and seabed photography.	Calesurvey. (2013a). Habitat survey involving geophysical survey (SSS, MBES, SBP), grab samples and seabed photography
2013	Ettrick	Environmental survey of proposed well locations including collection of 2DHR data, pinger SBP, single beam echosounder, MBES, SSS and Chirp and MAG data.	Calesurvey. (2013b). Ettrick Site Survey UKCS Blocks 20/2a & 20/3a Results Report

32. The geology within the Study Area has been divided by MSDS Marine into nine phases as summarised in **Table 1-3**.

Table 1-3: Shallow Stratigraphy of the Study Area Identified by MSDS Marine

Unit Name	Unit Age	Environment	Sediment Type	Archaeological Potential
Modern seabed sediments	Holocene	Marine	Veneer of fine silty sand with occasional shell fragment	Limited
Forth Formation (partially laterally equivalent to the Witch Ground Formation)	Late Devensian to early Holocene (MIS 2-1)	Glaciomarine, marine, estuarine, intertidal?	Sands resting on marine to glaciomarine muds	Archaeological and paleoenvironmental potential within some members
Witch Ground Formation	Late Devensian to early Holocene (MIS 2-1)?	Glaciomarine to marine	Very soft to soft silty clay with interbedded very loose silty sand toward the base (confirmed by vibrocores and CPTs). Highly irregular and erosive base.	Very limited
Wee Bankie Formation (laterally contemporary with the Swatchway Formation)	Late Devensian (MIS 3-2)	Sub glacial	Diamicton with some interbeds of sand, pebbly sand, and silty clay.	Limited/ no potential for in situ remains
Swatchway Formation	Late Devensian (MIS 3-2)	Glaciomarine to sub glacial?	Soft to firm silty clay and silty sand with occasional gravel, cobbles, and boulders	Very limited
Coal Pit Formation	Late to Middle Pleistocene (MIS 6-3)	Glaciomarine, marine, intertidal	Firm to stiff clay with dense layers of sand and occasional gravel, cobbles, and boulders	Limited
Fisher Formation	Middle Pleistocene Wolstonian Complex (MIS 10 – 6)	Glaciomarine to sub glacial	Firm to very stiff sandy clay, with sand layers.	Very limited

Unit Name	Unit Age	Environment	Sediment Type	Archaeological Potential
Ling Bank Formation	Middle Pleistocene	Glaciomarine to marine	Stiff to very stiff clay, silt and sand with gravel, cobbles, and boulders	Very limited
Aberdeen Ground Formation/ Near Base Quaternary	Middle to Early Pleistocene	Deltaic, marine, glacial, and terrestrial	Very stiff to very hard clay with occasional sandy and silty layers	Limited

33. These sedimentary units have been identified within the seismic data based on their seismic character and likely depositional environment, and tentatively correlated with known geological formations in the area based on the available data (Gardline, 2022). The base of each sedimentary unit has been mapped to feed into the ground model, and grids have been exported from the ground model for this assessment.
34. The Stratigraphy set out in **Table 1-3** is a combination of all the interpreted shallow geological units from across the Study Area. The entire stratigraphy was not identified in any one single area of the Study Area, and the exact number of units present will differ depending on location. A full description of the stratigraphy is provided in **Section 9.5 of Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**.
35. MSDS Marine have also interpreted several palaeogeographic features from the SBP data. While the seabed in the Windfarm Site is largely flat, with gentle undulations, pockmarks are recorded throughout the Windfarm Site (formed resulting from methane venting from deeper marine sediments). Similarly, several irregular depressions thought to be associated with glacial boulders have been identified. Buried plough marks have also been observed within the bathymetry data, again likely associated with glaciation (Gardline 2021). The bathymetry and these features can be seen in **Figure 14 of Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**. No other features associated with palaeolandscapes have been identified within the Offshore Export Cable Corridors or the Windfarm Site.
36. Other seabed features noted within the array site are of modern origin and include scarring associated with former drilling, pipe laying and anchoring. These seabed scars were mapped by Gardline and are also presented in **Figure 4 and Figure 5 of Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**.

### 1.3.3 Maritime and Aviation Archaeology

37. Within the Offshore Development Area there are no Historic MPAs. These are no designated areas, protected under Part 5 of the Marine (Scotland) Act 2010, which protect '*marine historic assets*' of national importance which survive in Scottish territorial waters.
38. Marine historic assets are defined in law and include a wide variety of man-made structures, including wrecked vessels and aviation crash sites. It can also include more scattered remains such as groups of artefacts on the seabed or submerged prehistoric landscapes (Historic Environment Scotland, 2019).
39. Similarly, there are no assets protected under the Protection of Military Remains Act 1986.
40. SSS, MBES, and MAG data interpreted by MSDS Marine has demonstrated the presence of several seabed features which have been identified at varying levels of archaeological potential. Seabed features are discriminated by MSDS Marine in accordance with the definitions set out in **Table 1-4** below.

Table 1-4: MSDS Marine criteria for discriminating the relevance of identified seabed features with the Study Area

Potential	Criteria
Low	An anomaly 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 anomalies with no wider context; or small boulder-like features with associated MAG readings.
Medium	An anomaly 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	An anomaly almost certainly of anthropogenic origin and with a high potential of being of archaeological significance – high potential anomalies tend to be the remains of wrecks, the suspected remains of wrecks, or known structures of archaeological significance.

41. In total 32 anomalies of potential archaeological interest were identified by MSDS Marine. These are distributed across the Study Area as shown in **Figures 8 & 9 of Chapter 15: Offshore Archaeology and Cultural Heritage of the Offshore EIA Report.**

Table 1-5: Distribution of archaeological anomalies by potential

Potential	Windfarm Site	Windfarm Site 500m buffer	Landfall Export Cable Corridor	Buzzard Export Cable Corridor	Total
Low	22	7	1	1	31
Medium	0	0	0	0	0
High	1	0	0	0	1
<b>Total</b>	<b>23</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>32</b>

42. 31 anomalies have been interpreted by MSDS Marine as low archaeological potential within the Study Area. 22 of these anomalies lie within the Windfarm Site, while seven lie within the 500m buffer of the Windfarm Site. The two remaining anomalies are located along the cable corridors (one within the Buzzard Export Cable Corridor and the other in the Landfall Export Cable Corridor). These anomalies are set out in **Table 1-6.**

Table 1-6: Low potential anomaly categories as defined by MSDS Marine

Anomaly Category	Count	Anomaly ID
Chain, cable, or rope	2	GV22_0006 and GV22_0023
Likely geological	1	GV22_0004
Possible mine sinker	8	GV22_0025 - GV22_0032
Potential debris	11	GV22_0002, GV22_0003, GV22_0009, GV22_0010, GV22_0011, GV22_0014, GV22_0015, GV22_0017, GV22_0019, and GV22_0022
Unidentified debris	9	GV22_0005, GV22_0012, GV22_0016, GV22_0018, GV22_0020, GV22_0021, GV22_0013, and GV22_0007
<b>Total</b>	<b>31</b>	

43. As identified in **Table 1-6** eight of the anomalies were identified as possible WWII mine sinker weights. These were identified in the southwest corner of the Windfarm Site and its 500m buffer. Seven of these were arranged along a line extending c.1.8 km and orientated approximately north/northwest, south/southeast. They were interpreted as mine sinkers by Gardline based on similar evidence from other surveys undertaken in the area (Gardline Ltd, 2021). The potential sinker weights have limited archaeological interest as objects, rather their interest is that they could represent the location of a historic mine field. As their archaeological interest as objects is limited, they have been categorised as low potential.

44. The remaining anomalies were reviewed by MSDS Marine and have been interpreted as low archaeological potential. These likely comprise a mixture of small features, often boulder like, or likely to represent modern debris such as chain, cable, or rope or linear features. The distribution of low potential anomalies is presented in **Figure 9 of Chapter 15, Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**.
45. No anomalies of medium potential were identified by MSDS Marine in accordance with the criteria set in Table 1-4. However, one anomaly has been identified as being of high archaeological potential (**GV22\_0008**) seen as a wreck in the geophysical data, located within the northwestern area of the Windfarm Site and visible in both the SSS and MBES data. It is also associated with a magnetic anomaly of 125 nano Tesla (nT).
46. There is no United Kingdom Hydrographic Office (UKHO) record of a wreck at the location of anomaly **GV22\_0008**, although the *Ernst Friesecke*, a German cargo vessel built in 1955, is recorded as having been lost in the vicinity of this position in 1972. It seems probable that the vessel located at **GV22\_0008** represents the remains of the *Ernst Friesecke*. Should this be confirmed, the wreck may be of limited archaeological interest as a modern vessel of recent construction.
47. Similarly, 115 magnetic anomalies were identified, however, only six of these are not associated with existing infrastructure relating to the Ettrick and Blackbird oil fields (**Figures 4 & 5 of Chapter 15: Offshore Archaeology and Cultural Heritage**), or with corresponding SSS or MBES anomalies of archaeological potential. All six of these anomalies are located within the Windfarm Site, the distribution of which are presented in **Figure 14 of Chapter 15: Offshore Archaeology and Cultural Heritage**. All these anomalies had a MAG. reading of >50nT so are considered be of limited potential to be of archaeological significance. They likely represent isolated items of metallic debris.
48. In addition to the seabed features and magnetic anomalies there are many historic environment records (HER) in the Offshore Development Area. There are however several assets charted/recorded by the UKHO, CANMORE, and Aberdeenshire HER within the cable corridors. These are presented in **Table 1-7** below.

Table 1-7: Distribution of heritage records across the Project areas

Data Set	Array Area	Offshore Cable Corridor	St Fergus South cable corridor	NorthConnect Parallel cable corridor	Total
UKHO	2	0	0	3	5
CANMORE	2	3	4	11	20
Aberdeenshire HER	0	2	14	18	34

49. The records presented in **Table 1-7** largely relate to 19th and 20<sup>th</sup> century losses, with largest concentrations towards shore. These records do not necessarily relate to physical remains of vessels at the recorded locations, but document records of lost vessels which have the potential to be present, currently undiscovered, within the Project Area or in the wider region. Full descriptions of these records are presented in **Appendix 1-1, Appendix 1-2 and Appendix 1-3**
50. As part of the NorthConnect Interconnector assessment of geophysical data, two wrecks were identified outside the cable corridor (NorthConnect, 2018). These were a motor vessel lost in 1925 and a fishing vessel lost in 1917. Both wrecks were surrounded by a debris field of varying size and complexity. Within the NorthConnect Offshore Survey Corridor, four further wrecks were identified. Two of these were identified as debris, while another identified as a fishing vessel. The fourth was thought to have been the remains of an aircraft. Due to the character of the wreckage, it was recommended that unless further information becomes available, the site should be treated as if it were protected under the terms of the Protection of Military Remains Act 1986 (NorthConnect, 2018).

51. Additionally, during WWII Peterhead was the second most bombed location in Britain, being bombed 28 times. This was because Peterhead was the first built-up area the Luftwaffe reach during bombing runs from Norway (Taylor, 2010). Similarly, Aberdeen was bombed 24 times and Clydebank also saw several attacks. The development and cable corridor are likely to have lain within the Luftwaffe flight path during these raids, so there is potential for aviation remains relating to these bombing runs located within the development site and cable corridor.

### 1.3.4 Intertidal Archaeology

52. Within the intertidal zone there are no designated heritage assets, however, there are a several of non-designated heritage assets recorded by CANMORE and Aberdeenshire HER. There are seven Aberdeenshire HER records and four CANMORE records within the intertidal zone, all are located within the footprint of the St Fergus South Landfall Export Cable Corridor (**Chapter 15: Offshore Archaeology and Cultural Heritage** of the **Offshore EIA Report**).
53. Both sets of records largely comprise the recorded locations of 19th and 20th century wrecked vessels and World War II (WWII) defensive structures. The Aberdeenshire HER records comprise:
- A previously recorded line of WWII anti-tank blocks (NK14NW0084);
  - Two WWII type 24 Pillboxes (NK14NW0080 & NK14NW0079);
  - The recorded location of three 20th century steamships (NK14NW0112, NK14NW0303 & NK14NW0185); and
  - A 19th century brig (NK14NW0264).
54. The four reported losses are summarised in **Table 1-8** below.

Table 1-8: Recorded wreck locations in the intertidal zone

HER ID	CANMORE ID	Name	Description
NK14NW0112	101741	Magician	The steel steamship Magician, carrying a general cargo from Trinidad to London was wrecked on Craigewan, 2 miles north of Peterhead, on the 14th April 1944.
NK14NW0303	101741	Deeside	The steel steam trawler Deeside (A 397), in ballast, was stranded at Craigewan Rock on the 21st January 1917.
NK14NW0185	101741	Renaissance	The steel trawler Renaissance (formerly named as JOHN H IRVINE), carrying a cargo of fish, was stranded on Craigewan Rock, about 0.5-mile northeast of the mouth of the River Ugie, on the 25th March 1928.
NK14NW0264	275871	N/A	A brig was wrecked on Craigewan Rock, near Peterhead, in January 1849.

55. There are no recorded remains associated with these wrecks and the Aberdeenshire HER records their conditions as unknown. As such, these records represent the recorded location of a wrecking event rather than the recorded physical wreck remains. However, some fragmentary remains be present within the area.
56. Based on the above, there is a medium potential for further unrecorded defensive military remains and low potential for unrecorded wreck remains. However, these would likely be fragmentary in nature. With the use of HDD for the cable installation beneath the intertidal zone, such remains are unlikely to be encountered during construction.

## 1.4 Impact Assessment

### 1.4.1 Potential Impacts

57. **Chapter 15: Offshore Archaeology and Cultural Heritage** of the Environmental Statement (ES) identifies the potential for impacts upon offshore and intertidal archaeology and cultural heritage. These include both direct and indirect physical changes and non-physical changes to the setting of heritage assets or historic seascape character (HSC).
58. Direct (physical) impacts to heritage assets below MHWS, either proud of the seabed or buried within it, or within intertidal deposits, may result in damage to, or destruction of, archaeological material. Impacts may also damage the relationship between the material and the wider environment. Direct impacts may occur where heritage assets are located within the footprint of the Project where construction activities will take place. These include:
- seabed clearance;
  - installation of turbine moorings and cables; and
  - vessel anchoring.
59. Indirect (physical) impacts may occur where changes to the hydrodynamic and sedimentary process regimes, resulting from the Project, affect heritage assets by altering erosion and accretion patterns or altering tidal currents. This may affect the stability of nearby morphological and archaeological features.
60. Such impacts may occur if buried heritage assets become exposed to marine processes, due to increased wave or tidal action. This will result in a faster rate of deterioration than heritage assets afforded protection by sediment cover. Conversely, increased sedimentation could result in an exposed site becoming buried thus affording it protection and may be considered a beneficial effect.
61. The setting of a heritage asset is described as the surroundings in which a heritage asset is experienced (Historic Environment Scotland, 2020). Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral. HES's guidance on setting notes how the setting of buried heritage assets may not be readily appreciated by a casual observer but retain a presence in the landscape.
62. For offshore assets, for the most part, submerged archaeological sites are not 'readily appreciated by a casual observer' and their 'setting' does not form a key part of their significance. However, offshore heritage assets may still be located physically within a 'setting' of relevance to their historical and archaeological interest which may also be of relevance to the HSC of a Study Area. Therefore, it is essential that this character is considered in terms of ability to accommodate change and how perception of character might be changed by a proposed project.

### 1.4.2 Embedded and Additional Mitigation

63. A range of different information sources has been considered as part of embedding mitigation into the design of the project including engineering requirements, ongoing discussions with stakeholders and regulators, commercial considerations, and environmental best practice.
64. In order to prevent significant impacts, the following mitigation has been recommended by MSDS Marine and embedded in the project design. These are presented in **Table 1-9**.



Table 1-9: Summary of embedded mitigation

Strategy	Description
Archaeological Exclusion Zones (AEZs)	For archaeologically significant anomalies that are clearly identifiable in the survey data and where the extents are largely known, AEZ will be recommended. AEZs will remain for the life of the project or until ground truthing or higher resolution data determines a reduction in potential, significance, or extents.
Temporary Archaeological Exclusion Zones (TAEZs)	Where an anomaly is not visible in the survey data but likely to exist on the seabed at a known position or where the extents of an anomaly are not fully identifiable, Temporary Archaeological Exclusion Zones (TAEZs) will be recommended. TAEZs have been identified as highly likely to be altered following higher resolution or full coverage data assessment, however, they will remain in place until alterations have been formally agreed.
Areas of Archaeological Potential (AAP)	AAP are primarily reserved for magnetic anomalies where, due to line spacing, positions are not accurately known. AAPs demonstrate that there is potentially an anomaly of archaeological significance around the given position. The anomaly is likely to be identified following higher resolution or full coverage data assessment but as the nature and position is not precisely known, no formal exclusion zone is recommended but instead a general awareness of the position is considered appropriate at this phase.

65. Mitigation strategies are based on the criteria set out in **Table 1-4**. Measures will include:
- Watching briefs where seabed material is brought to the surface, for example during pre-lay grapnel runs;
  - Watching briefs for any intrusive works carried out in the landfall zone (during long HDD); and
  - The archaeological assessment of any further geophysical data.
66. As stated above, the primary means of preventing impacts to known heritage assets is avoidance. It is also noted that proposed AEZs may be reduced, enlarged, or removed in agreement with HES if further relevant information becomes available. However, unless modified by agreement, it is important that AEZs are retained throughout the project lifetime. Additionally, monitoring of AEZs may be required by the regulator and curator to ensure adherence both during construction and in the future operation of the wind farm.
67. If anomalies cannot be avoided then additional work may be required to further investigate the nature and extent of anomalies, to establish the archaeological interest and to record them prior to removal as set out in this WSI.
68. In terms of the seabed prehistory, following the collection of engineering led geotechnical cores post-consent, these will undergo a staged program of geoarchaeological assessment and analysis. In brief the process is as follows;
- Stage 1: Geoarchaeological review of core logs;
  - Stage 2: Geoarchaeological recording;
  - Stage 3: Geoarchaeological assessment;
  - Stage 4: Geoarchaeological analysis; and
  - Stage 5: Final reporting.
69. HES will also be consulted on the scope of all further post-consent geophysical and geotechnical surveys undertaken for the project. This will ensure that the data generated are sufficiently robust to enable professional archaeological interpretation and analysis.

70. To account for unexpected discoveries of archaeological material during construction, operation and decommissioning, a formal protocol will be established. It is recommended that if any objects of possible archaeological interest are encountered, that they should be reported through a PAD. This will largely follow the principles set out in the *Protocol for Archaeological Discoveries: Offshore Renewables Projects* (The Crown Estate, 2014) (ORPAD) and will establish whether the objects are of archaeological interest and recommend appropriate mitigation measures where necessary.

### 1.4.3 Impact Assessment Summary

71. With due consideration of the mitigation and investigation outlined above, potential impacts to archaeology and cultural heritage below MHWS have been assessed as part of the EIA for the Project. A summary of the impacts and suggested mitigation is provided in **Table 1-10** below.



Table 1-10: Summary of Potential Impacts

Potential impact	Receptor	Cultural Heritage Importance	Magnitude of Impact	Significance of Effect	Mitigation Measures Proposed	Residual Effect	Cumulative Residual Effect
<b>Construction</b>							
Impact C1: Direct impact to known heritage assets	Wrecks and anomalies of archaeological interest (GV22_0008 <i>Ernst Friesecke</i> )	No Change due to application of AEZs				No Change	No Change
	Historic wrecks for which remains have yet to be identified	No Change due to application of AEZs				No Change	No Change
	Additional anomalies of possible archaeological interest	No Change due to avoidance of these locations through micro-siting				No Change	No Change
	Intertidal Assets (WWII defensive structures)	No Change due to avoidance of these locations using HDD				No Change	No Change
Impact C2: Direct impact to potential heritage assets	<i>In-situ</i> prehistoric, maritime or aviation sites	High	High	Minor adverse	Further assessment and investigation and additional mitigation to avoid, reduce or offset impacts.	Minor adverse	Potential beneficial effect (described but currently not quantifiable, to be realised post-consent through provision of publicly accessible data)
	Intertidal assets	No Change due to avoidance of these locations through micro-siting				No Change	
	Isolated finds	Medium	Low	Minor adverse	Protocol for archaeological discoveries.	Minor adverse	
Impact C3: Indirect impact to heritage assets from changes to physical processes	Known and potential heritage assets	Medium to High	Low	No Change	N/A	No Change	No Change

Potential impact	Receptor	Cultural Heritage Importance	Magnitude of Impact	Significance of Effect	Mitigation Measures Proposed	Residual Effect	Cumulative Residual Effect
Impact C4: Impacts to the setting of heritage assets	Known and potential heritage assets	Medium to High	Low	No Change	N/A	No Change	No Change
<b>Operation</b>							
Impact O1: Direct impact to known heritage assets	Known heritage assets	No Change due to application AEZs				No Change	No Change
Impact O2: Direct impact to potential heritage assets	<i>In-situ</i> prehistoric, maritime or aviation sites	High	High	Minor adverse	Further assessment of geophysical and geotechnical data post-consent.	Minor adverse	Potential beneficial effect (described but currently not quantifiable, to be realised post-consent through provision of publicly accessible data)
	Isolated finds	Medium	Low	Minor adverse	Protocol for archaeological discoveries.	Minor adverse	
Impact O3: Indirect impact to heritage assets from changes to physical processes	Known and potential heritage assets	Medium to High	No Change as <b>Chapter 7: Marine Geology, Oceanography and Physical Processes</b> concluded impacts would be low as a worst case. As such there will be No Change to the cultural significance of heritage assets.		N/A	No Change	No Change
Impact O4: Impacts to the setting of heritage assets	Known and potential heritage assets	Medium to High	Low	Minor negligible	N/A	Minor negligible	Minor negligible
	WWII defensive structures	No Change as the turbines will not be visible from shore. Similarly, construction activities within the intertidal zone will be temporary and will therefore not result in a long-lasting change.				No Change	No Change

Potential impact	Receptor	Cultural Heritage Importance	Magnitude of Impact	Significance of Effect	Mitigation Measures Proposed	Residual Effect	Cumulative Residual Effect
<b>Decommissioning</b>							
Impact D1: Direct impact to known heritage assets	Known heritage assets	No Change due to application AEZs				<b>No Change</b>	<b>No Change</b>
Impact D2: Direct impact to potential heritage assets	<i>In-situ</i> prehistoric, maritime or aviation sites	High	High	Minor adverse	Further assessment of geophysical and geotechnical data post-consent.	<b>Minor adverse</b>	<b>Potential beneficial effect</b> (described but currently not quantifiable, to be realised post-consent through provision of publicly accessible data)
	Isolated finds	Medium	Low	Minor adverse	Protocol for archaeological discoveries.	<b>Minor adverse</b>	
Impact D3: Indirect impact to heritage assets from changes to physical processes	Known and potential heritage assets	No change as the types of effect will be comparable to those identified for the construction phase.				<b>No Change</b>	<b>No Change</b>
Impact D4: Impacts to the setting of heritage assets	Known and potential heritage assets	Medium to High	Low	Negligible adverse	N/A	<b>No Change</b>	<b>No Change</b>

## 1.5 Roles, Responsibilities and Communications

72. The overall responsibility for the implementation of the final Offshore WSI will be with the project team (or subsequent project owner) (herein referred to as the 'project team'). The project team will ensure that its agents and contractors are contractually bound to adhere to the terms of the final Offshore WSI, including the implementation of the PAD (**Section 1.10**).
73. For each phase of archaeological works the project team or their agents will obtain the services of specialised archaeological contractors with the required expertise and experience to undertake the necessary archaeological works as and when required.
74. The project team will also retain the services of a suitably qualified and experienced archaeological contractor as the 'retained archaeologist'. The retained archaeologist will oversee and ensure the successful implementation of the final Offshore WSI and contractual commitments relating to archaeology.
75. The responsibilities of the retained archaeologist are as follows:
- Producing, reviewing, and updating this WSI after consultation with the project team, regulators, The Planning and Environmental Appeals Division and the curators (HES) to produce and agree a final Offshore WSI;
  - Advising the project team of their responsibilities in the implementation of the final Offshore WSI and the PAD;
  - Compiling, agreeing, and issuing method statements to archaeological contractors to adhere to, after consultation with the project team, regulators and curators;
  - Advising the project team on necessary interactions with the regulators, curators and other third parties;
  - Procuring and liaising with specialist archaeological contractors and monitoring the works undertaken by them;
  - Monitoring the preparation and submission of archaeological reports as required and making them available to the regulators and curators for review and approval; and
  - Advising the project team on any final requirements and arrangements for further analysis, archive deposition, publication, and popular dissemination.
76. All agents and contractors engaged by the Project team will:
- Familiarise themselves with the requirements of the final Offshore WSI and make it available to their staff;
  - Explain the requirements of the final Offshore WSI and the need for strict adherence to it;
  - Familiarise themselves with the PAD (**Section 1.10**) and ensure its implementation;
  - Ensure adherence to the protocol by staff, ensuring staff awareness of the protocol and making staff available for training through toolbox talks, as necessary;
  - Assist and afford access to archaeological contractors as advised by the Project team and the retained archaeologist; and
  - Inform the retained archaeologist and the archaeological contractors of any environmental or health and safety constraints which they may be aware of that relate to the archaeologist's activities on site.

77. The specific responsibilities of the specialist archaeological contractors during subsequent phases of work will be set out in separate specific method statements relevant to each package of works.
78. The regulatory body responsible for enforcing conditions is Marine Scotland (MS). The regulatory body responsible for enforcing the implementation of requirements is the relevant Planning Authority in which the works are situated.
79. The archaeological curator for heritage matters offshore (below MHWS) is HES. The archaeological curators responsible for heritage matters onshore (above Mean Low Water Springs (MLWS) and including the intertidal zone) are Aberdeenshire Council Archaeology Service.
80. Prior to and during any geoarchaeological recording, assessment and analysis, consultation with HES will be undertaken to agree on the suitability of the approach.

## 1.6 Methodology for Further Site Investigation

### 1.6.1 Marine Geophysical Investigations

81. The geophysical data assessed by MSDS Marine to inform the **Offshore EIA Report** chapter has been summarised in **Section 1.3.1**. As discussed above, limited parts of the Study Area were not covered by the 2021/2022 surveys. The geophysical data assessment carried out in support of the EIA Report is considered to provide an accurate characterisation of the archaeological potential of the Study Area, appropriate to the purposes of EIA. However, prior to the acquisition of pre-construction geophysical data, it is recommended that a review of all the data is undertaken by a suitably qualified and experienced archaeological contractor. This will clarify the suitability of existing data and will include the identification of any data gaps. This will help to inform the acquisition of pre-construction geophysical data.
82. As part of the data review, the archaeological contractor should identify specific objectives to inform the scope of further survey work. The acquisition and assessment of geophysical data will be carried out in accordance with good practice as set out in The Crown Estate (2021) guidance and industry guidelines including.
83. As stated in The Crown Estate (2021) guidance, archaeological input will take the form of advice on the following points:
  - available details of sites, features and/or anomalies identified in previous studies;
  - archaeological potential of areas where no existing sites, features and/or anomalies are yet known;
  - geophysical survey specification including design, geophysical sources, and acquisition methodology; and
  - requirements for processing and interpreting of resulting data.
84. The specification of any proposed marine geophysical surveys whose primary aim is non-archaeological will be subject to advice from the retained archaeologist. This will ensure that archaeological input is provided at the planning stage and will enable archaeological considerations to be accounted for without compromising the primary objective of the survey. This is likely to include the acquisition of SSS, MAG, MBES and SBP data. The data will also be sufficiently robust to enable professional archaeological interpretation and analysis.

85. A series of archaeological objectives will be established by the retained archaeologist for the acquisition of pre-construction data. The overarching objectives of the assessment of marine geophysical survey data are to:
- Identify known heritage assets and provide additional detail on the nature and extent of those assets;
  - Identify previously unidentified seabed features;
  - Identify buried palaeolandscape features that help to clarify the nature of the submerged prehistoric landscape; and
  - Monitor construction and post-construction effects.
86. Before any further geophysical survey takes place, the retained archaeologist will advise The Applicant if a method statement will be required to inform additional consultation with MS-LOT and HES. This will usually be in the form of a method statement (or alternative format for pre-consent surveys undertaken before the creation of the WSI). This will reference existing guidance, where appropriate. The method statement will be issued by the project team in advance of any further geophysical survey campaigns that incorporate archaeological objectives. The project team will be responsible for ensuring that all surveys proceed in line with any planned method statement as agreed with HES.
87. It should be noted that not all archaeological remains can be identified through geophysical survey, particularly non-ferrous buried remains such as wooden vessels. Specific consideration will, therefore, need to be given to the scope of geophysical surveys which incorporate archaeological objectives. The limitations of geophysical equipment to penetrate deep into mobile sediment where archaeological material, particularly non-ferrous material, could be buried must also be considered.
88. On completion of the geophysical surveys the data will be processed, assessed, and interpreted by an experienced and qualified archaeological contractor. Geophysical survey data, supplied to an agreed technical standard and specification, at the same level of fidelity as recorded, will be interpreted by an archaeological geophysicist with an appropriate level of expertise. Survey data, together with operational reports and trackplots, should be made available in digital formats to the archaeological geophysicist.
89. Where possible full-fidelity data unreduced in range, frequency, sampling, and dimensionality from that recorded must be used as the input for archaeological interpretation. Full detail on the provision of data for assessment is provided in The Crown Estate guidance (2021: 20).
90. The results of further geophysical interpretation will be compiled as an archaeological technical report consistent with the methodologies for reporting set out in The Crown Estate (2021) guidance and will form part of the project archive as set out in **Section 1.9**. The resulting spatial interpretation data, such as the locations and extents of identified features and/or deposits of archaeological potential, will be provided alongside the compiled report in a suitable digital format. These include Geographic Information System (GIS) shapefiles or Computer Aided Design (CAD) drawing files as agreed with the project team and, where appropriate, the archaeological curator(s).
91. All reports and digital deliverables relating to the assessment should be available for subsequent data interpretations within the life cycle of the project.

## 1.6.2 Marine Geoarchaeological Investigations

92. No geotechnical data has been acquired to date. As such, if required the geoarchaeological assessment of all further geotechnical data acquired for the project forms part of the commitment by the project team to additional mitigation and investigations.
93. Detail on the key tasks and associated aims associated with marine geoarchaeological investigation and assessment is set out in The Crown Estate guidance (2021: 24, Table 4). In summary, these tasks include:
- Geoarchaeological input into geotechnical survey planning (to ensure archaeological objectives are considered in the planning stage of the geotechnical survey);
  - Review of geotechnical logs (to establish the likely presence and depth of deposits of archaeological interest and provide a broad characterisation of the site);
  - Recording of geotechnical cores (to preserve by record individual core or borehole samples of potential archaeological interest);
  - Archaeological sampling (to retain adequate samples (quantity and quality) for palaeoenvironmental assessment and analysis and dating); and
  - Assessment and analysis (to provide a chronostratigraphic and palaeoenvironmental understanding of the area, to inform interpretation of geophysical datasets and ground model).
94. Where geotechnical surveys are undertaken for primarily non-archaeological purposes, advice will be obtained from the retained archaeologist, to ensure that archaeological considerations are accounted for. These surveys, and subsequent geoarchaeological assessment, will be undertaken in accordance with The Crown Estate (2021) guidance and with industry best practice as set out in but not limited to:
- Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector (Gribble and Leather 2011).
95. The geotechnical specification will also be informed by any previous stages of work, for example archaeological interpretation of geophysical data. This will allow for previous and additional objectives to be achieved.
96. Borehole/vibrocore locations will be micro-sited to avoid recommended AEZs and anomalies of possible archaeological interest, as set out in **Section 1.7.1**. Comparison of the proposed locations will also be made to the positions of previously identified palaeogeographic features and deposits of archaeological interest. This will allow for samples to be obtained to inform archaeological interpretation. Provisions will be made for archaeology specific boreholes to be acquired where deposits of archaeological or palaeoenvironmental potential have been identified.
97. During all geotechnical surveys, all operatives should observe the Protocol for PAD, as set out in **Section 1.10**. Archaeological briefings for survey staff will be carried out prior to the commencement of surveys and the project team will be responsible for ensuring that surveys proceed in accordance with any planned method statement agreed with HES.
98. The project team will procure the services of a specialist geoarchaeological contractor to undertake assessment, and, if required, palaeoenvironmental analysis and dating. The primary aim of any geoarchaeological investigations will be the development of a Quaternary (sedimentary) deposit model for the Study Area.
99. Geotechnical cores, or a representative sample of cores agreed with the archaeological contractor, will be retained undisturbed until a selection of cores for archaeological recording has been made. If



the cores cannot be retained then further steps should be taken, such as having an archaeologist present during sampling operations.

100. Geoarchaeological assessment will be carried out in accordance with existing interpretations of SBP data assessed for the Project. As set out above in **Section 1.6.1**, any further SBP data acquired for the project will be assessed by a suitably qualified and experienced archaeological contractor. This will allow for the results of the geotechnical surveys to be incorporated with subsequent geoarchaeological assessment.
101. Prior to the commencement of any site investigation campaign a method statement will be prepared by the retained archaeologist and issued by the project team. This will set out the specific details of the campaign to inform consultation with HES regarding the scope and proposed locations of geotechnical work. HES will also be consulted on subsequent geoarchaeological assessments commissioned by the project team.
102. As stated in The Crown Estate (2021) guidance, it is also recommended that the method statement includes a timetable and policy for the storage, retention, and disposal of offshore samples. This will include access to the geotechnical material, agreed at the outset of the geotechnical investigation, between the project team, HES, and any receiving institutions (e.g., the geotechnical testing laboratory).
103. The results of further marine geoarchaeological assessment will be compiled as an archaeological technical report consistent with the methodologies for reporting set out in The Crown Estate (2021) guidance. This will form part of the project archive as set out in **Section 1.9**. The final report will integrate the results of review, recording, assessment, analysis, and dating.
104. The report will address the palaeoenvironment, prehistory and any other historical periods as relevant (for example, remains of Roman or medieval settlements now on the seabed) of the area affected by the development, including relevant data generated by desk-based assessment and other field investigations, including geophysical surveys. Where necessary, the geophysical data interpretation may need to be re-assessed depending on the findings of the geotechnical assessment. If warranted, publication of the findings will need to be considered depending on the results of the assessment.

### **1.6.3 Archaeological Investigation using Divers and / or Remote Operated Vehicles (ROV)**

105. During detailed design of the Project post-consent, following the acquisition and assessment of pre-construction geophysical data, it may be possible to micro-site the components of the development to avoid AEZs and any other geophysical anomalies of archaeological potential.
106. As stated in The Crown Estate (2021) guidance, this would apply to:
  - the anchors of floating turbine substructures;
  - the substructures of associated infrastructure (such as the OSP and any met masts);
  - cables; and
  - anchors of vessels.
107. These footprints will likely correspond to areas which will require As Low as Reasonably Possible (ALARP) certification for risks associated with Unexploded Ordnance (UXO).
108. However, if it is not possible to avoid geophysical anomalies of archaeological potential, further assessment will need to be undertaken to confirm their character. To this end, diver and / or ROV



investigation will be implemented to further establish the archaeological interest of any seabed features seen in the geophysical data which haven't been previously identified. Ground-truthing may also be required to clarify the extent of a site to alter (enlarge, reduce, move, or remove) AEZs as set out in **Section 1.7.1**.

109. All ground-truthing that may be required to inform the construction of the Project will be carried out in accordance with good practice as set out in The Crown Estate (2021) guidance.
110. Diver or ROV-based investigations will take place as required and, where the primary objectives are archaeological, operations will be led by archaeologists. However, it may also be possible to combine such surveys with non-archaeological objectives, for the identification of UXO, for example.
111. For any diver and/or ROV survey a method statement will be produced prepared by the retained archaeologist (or the archaeological contractor, if appointed) and in consultation with the project team and HES.
112. To maximise the potential benefits of any proposed diver or ROV surveys, the project team will seek archaeological input at the planning stage of any such works. Any such survey specification will be informed by previous stages of the project, so that archaeological considerations can be considered.
113. The selection of geophysical anomalies requiring ground-truthing/assessment will require consideration of a multitude of factors. There may be a limited number of geophysical anomalies to assess which can easily be incorporated into the scope of planned ROV surveys for UXO. Several geophysical anomalies identified as being of possible archaeological interest may also correspond to anomalies interpreted as potential UXO.
114. There is also potential for many anomalies to be present within the footprint of potential impact, necessitating additional consideration to select an appropriate proportion of anomalies. These may be based on the size of the features or on their location within an area of archaeological potential. The specific approach to the selection of anomalies for ground-truthing will be discussed as part of planning for diver and/or ROV surveys by the project team and retained archaeologist in consultation with HES. This will then be captured in the associated method statement.
115. Where the primary objectives of ROV or diver survey are non-archaeological, but may also contribute to archaeological objectives, consideration will be given to having the retained archaeologist (or the archaeological contractor, if appointed), present during the surveys. For example, when surveying sites of archaeological interest or in areas of high archaeological potential, the presence of an archaeological specialist will help to optimise archaeological results and thereby reduce the need for repeat survey. However, their inclusion would only occur when their input has been considered appropriate and proportionate and has been agreed through consultation with HES.
116. For surveys without an archaeologist on-board, training will be provided (i.e., through a briefing note supported by attendance at planned kick off meetings) to ensure that all operatives are fully informed of the archaeological objectives and requirements for acquiring and delivering data as necessary to understand the archaeological interest of investigated features.
117. All data, including the list of targets, target investigation reports and video footage, will be made available for review by the retained archaeologist (or an archaeological contractor with appropriate expertise). It is recommended that the daily reports and target investigation reports are also provided regularly during survey operations, to ensure timely archaeological advice.
118. If remains of archaeological interest are identified during diver / ROV surveys, where possible, they will be avoided through the implementation of AEZs (see **Section 1.7.1**). Where archaeological remains can't be avoided, if remains are small enough (e.g., anchors and other isolated finds) it may

be possible to move these outside the area of impact. However, if large remains such as a wreck are identified, the scheme design may need to be altered.

119. If this is not possible, consultation with HES will be undertaken to determine whether an archaeological diver/ROV-based assessment or further mitigation is required. Any further work will require detailed methodologies to be set out in a method statement, to be agreed with HES. Discussions may also need to include the Receiver of Wreck and if aircraft, the Ministry of Defence.
120. The results of diver / ROV assessment will be compiled as an archaeological technical report consistent with the methodologies for reporting set out in The Crown Estate (2021) guidance and will form part of the project archive as set out in **Section 1.9**. The report will identify those sites and/or geophysical anomalies that are potentially of archaeological interest and significance which may warrant further investigation. It will also identify and characterise those sites that are no longer of archaeological interest, and hence may be removed from the list of AEZs or geophysical anomalies of possible archaeological interest, following consultation with HES. The applicable digital data, including gazetteers and GIS shapefiles, will be updated by the retained archaeologist, and reissued to the project team and relevant contractors.

## 1.7 Delivery of Mitigation

### 1.7.1 Archaeological Exclusion Zones (AEZs)

121. AEZs agreed between the project team and HES will be the primary means employed to preserve features or remains of archaeological interest or potential archaeological interest *in-situ*.
122. The principal objective of an AEZ is to prevent damage to or disturbance of a wreck, aircraft or features of potential archaeological interest on the seafloor during activities that may cause damage or disturbance. A requirement for provisions to be made, where feasible, for the *in-situ* conservation of heritage assets is established through the *European Convention on the Protection of the Archaeological Heritage* (revised) (Valletta 1992) (Article 4).
123. The implementation, monitoring and modification of AEZs will take place in accordance with the measures specified in The Crown Estate (2021) guidance.
124. AEZs comprise a boundary placed around a heritage asset or potential assets where no development activities can be undertaken. The AEZ will extend from the boundary of the assets and will include a buffer to ensure that all material associated with that asset is encapsulated inside the boundary and will reduce the risk of unintentional impacts.
125. The position, extent, and design of any AEZs will consider all available information including geology, hydrology, and sediment transport. As most AEZs will not be a standard shape (i.e., they comprise a buffer around the known extents of the site rather than a circle consisting of a centre-point with a radius distance), the AEZs agreed during the EIA process must be supplied as a GIS shapefile.
126. The list of AEZs is 'live' and will be held in the project GIS maintained by the retained archaeologist. At all stages of the project development, the project team should supply the retained archaeologist (if different from the previous process) and all contractors with the agreed AEZs as shapefile data. In addition, all documentation required for project delivery provided to contractors will include the lists and illustrated locations of AEZs.
127. Subject to approval by HES, it is recommended that AEZs are implemented around all anomalies of high archaeological potential. As only one anomaly of high potential was identified, a single 50m AEZ has been recommended and is presented in **Table 1-11** below.

Table 1-11: Recommended AEZ Within the Study Area.

ID	Classification	Potential	ETRS89 Z30N		AEZ (m)
			X	Y	
GV22_0008	Wreck	High	636672.5	6419826.0	50m

128. As set out in The Crown Estate (2021) guidance, AEZs may be altered (enlarged, reduced, moved, or removed) due to further data assessment or archaeological field evaluation covering those areas that are subject to AEZs. If new finds of potential archaeological significance come to light during pre-construction surveys, during construction, or during operation or decommissioning phases, for example, as reported through the PAD (**Section 1.10**), they may be subject to the implementation of a Temporary Exclusion Zone (TEZ). A TEZ will prevent impact to the seabed within their extents but allow activities in other areas to continue.
129. The need for, the design (position, extent) and implementation of any new exclusion zones (TEZs, which may be formalised and converted to AEZs), or any alterations to existing AEZs, will be subject to discussions between the retained archaeologist and the project team, and in consultation with HES. This will be confirmed with a formal response. Following alteration, a new plan giving details of the AEZs will be drawn up and issued to each relevant party.

### 1.7.2 Archaeological Watching Briefs

130. As defined in The Crown Estate (2021) guidance, a watching brief is:

*'a formal programme of archaeological monitoring that involves attendance by a suitably qualified and experienced archaeologist during groundworks or other site activities/interventions associated with the scheme in the terrestrial or inter-tidal zone, and/or marine activities such as during offshore obstruction clearance (where considered appropriate)'.*

131. With the use of HDD to install cables at the landfall, passing below the beach deposits, intertidal assets would be avoided. Therefore, watching briefs are not anticipated to be required.
132. Offshore, should activities be undertaken which could lead to disturbance to archaeological remains or remains being brought to the surface (e.g., clearance operations and pre-lay grapnel runs), an archaeological watching brief may be required. This would comprise on board supervision by a suitably qualified and experienced archaeologist. If areas subject to clearance are of medium or high archaeological potential, on board monitoring may be required to ensure consideration is given to any archaeological material brought to the surface. In areas of low archaeological potential any material brought to the surface will be dealt with through the PAD set out in **Section 1.10**.
133. It is anticipated that the archaeological assessment of high-resolution pre-construction geophysical data (**Section 1.6.1**) will allow for the spatial identification of locations where the risk of encountering unexpected archaeological material is higher. Areas where large sand wave features are present for example, have greater potential for concealing archaeological remains. Similarly, where area of greater concentrations of geophysical anomalies of archaeological potential have been recorded. Watching briefs may also be required if micro-siting to avoid seabed and sub-seabed features of potential archaeological interest is not possible.
134. Whilst not common practice offshore, should an on-board watching brief be required, the approach will be in accordance with The Crown Estate (2021) guidance. This will be set out in a method statement prepared by the retained archaeologist in consultation with HES. If significant archaeological material or palaeoenvironmental deposits are encountered then the project team, in consultation with HES, will make provision for the retained archaeologist (or the archaeological

contractor, if appointed), to undertake a programme of investigation commensurate with the evidence discovered.

135. Recording and reporting for any watching briefs, should these be required, will be undertaken in line with the approaches set out in The Crown Estate (2021) guidance.

### 1.7.3 Archaeological Recording, Samples and Artefacts

136. As required by The Crown Estate (2021) guidance, archaeological recording and assessment of samples and artefacts should be undertaken with the goal of addressing objectives set out in published local and regional research frameworks (such as those listed in **Section 1.2.3**).

137. The Crown Estate (2021) guidance sets out high-level methodologies for:

- Indexing and recording systems;
- Position-fixing and levelling;
- Environmental sampling strategies;
- Environmental samples: handling, labelling, packaging and storage;
- Artefacts: handling, labelling, packaging and storage;
- Ordnance;
- Human remains;
- Aircraft;
- Wreck; and
- Materials conservation and storage.

138. Any archaeological remains or environmental samples that are found during activities associated with the Project will be treated in accordance with this guidance and best practice as set out in:

- Standards and guidance for the collection, documentation, conservation, and research of archaeological materials (ClfA 2014c); and
- First Aid for Underwater Finds (Robinson 1998).

139. Isolated discoveries of artefacts that may come to light during the development will be dealt with through the PAD as set out in **Section 1.10**.

140. For activities where archaeological materials might be encountered each method statement will set out the approach to recording and dealing with samples and artefacts where relevant. These will be based on all relevant and specific guidance and best practice. A general summary of key requirements is included below.

141. Any finds recovered or exposed during archaeological works will, at the point of discovery, be held by the archaeological contractor in appropriate conditions pending further recording, investigation, study, or conservation. All finds will be recorded and labelled appropriately. Where it is impracticable to recover finds these will need recorded.

142. Contingency will be made for specialist conservation advice from an appropriately qualified and experienced Archaeological Conservator should unexpected, unusual, or extremely fragile and delicate objects be recovered. All retained finds will be processed in accordance with the ClfA 's

*Standard and guidance for the collection, documentation, conservation and research of archaeological material (ClfA, 2014c).*

143. Recovered objects will be selected, retained, or disposed of in accordance with the policy agreed with the institution receiving the archive, and in consultation with the archaeological contractors.
144. Should ordnance be discovered, it should be treated with extreme care as it may still be active? Guidelines on addressing UXO discoveries provided to contractors by the project team must be followed prior to any recording of items for archaeological purposes.
145. If human remains are identified, they should be treated with due care and respect. For each situation, the following actions are to be undertaken and the retained archaeologist will inform the project team and the archaeological curators.
146. For human remains on land and in intertidal areas, application should be made to the Ministry of Justice for an exhumation licence under the Burial Act 1857.
147. For human remains within territorial waters where the remains have been intentionally buried, applications should be made to the Ministry of Justice for an exhumation licence. In all other cases, the retained archaeologist will immediately inform the Coroner and the Police.
148. Where practical, the human remains will be left *in-situ*, covered, and protected. Where human remains have been found and development will unavoidably disturb them, the remains will be fully recorded, excavated, and removed from the site once the appropriate licence has been obtained.
149. An appropriate Human Skeletal Biologist will, if required, be available to advise on and assist with the recovery and storage of human remains. The excavation, recording, analysis and storage of any human remains will be undertaken in line with *the Guidelines to the Standards for Recording Human Remains* (Mitchell and Brickley 2017 and follow best practice as appropriate (BABAO 2010; Mays 2004; Mays *et al.*, 2013; McKinley and Roberts 1993).
150. Regarding the remains of crashed aircraft, most aircraft wrecks are military and so fall under the legal protection of the Protection of Military Remains Act 1986. These would have to be avoided without a licence. Any finds that are suspected of being military aircraft will be reported immediately to the retained archaeologist.
151. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately. For isolated items of aircraft reported through the PAD, with advice sought from HES as set out in **Section 1.10**.
152. All archaeological artefacts that have come from a ship are wreck for the purposes of the Merchant Shipping Act 1995. The project team, via their archaeological contractors, should ensure that the Receiver of Wreck is notified within 28 days of recovery, by the project team or their agents, for all items of wreck that have been recovered.
153. All recovered materials will be subject to a conservation assessment to determine whether special measures are required while the material is being held. This conservation assessment will be carried out by the retained archaeologist or an archaeological contractor with an appropriate level of expertise, with advice from appropriate specialists.
154. The retained archaeologist or an archaeological contractor with appropriate expertise will implement recommendations arising from the conservation assessment. Where no special measures are recommended, finds will be conserved, bagged, boxed, and stored in accordance with industry guidelines.



## 1.8 Requirements for Monitoring

155. Monitoring requirements are anticipated to comprise:

- Monitoring of the final Offshore WSI by the retained archaeologist in order to ensure that the scheme of investigation is appropriate to the scheme design;
- Monitoring of archaeological works by the archaeological curators, including monitoring of the effectiveness of AEZs; and
- Monitoring during and post construction, including a conservation programme for finds as set out in **Section 1.7.3**.

156. The performance of this WSI will be monitored over the course of the Project. If changes are made to the project or if archaeological issues come to the fore, revisions would be made to the WSI after agreement with MS in consultation with HES. Any changes would be made through method statements submitted for approval by the project team or their agents.

157. The reports prepared for each archaeological work package will be distributed to the MS and HES by the project team or their agents. This will allow for results to be reviewed and any archaeological concerns to be addressed.

158. All survey reports undertaken for the purposes of archaeological evaluation will be submitted to the MS and HES within a specified timescale of the survey being completed to be agreed with the regulator.

159. Prior to the start of any work timetables or work on site that may impact archaeology, HES and the MS will be notified. They will be informed at this time of the name and contact details of the retained archaeologist.

160. During any site evaluation, investigations, or construction work with the potential to impact archaeology, the retained archaeologist, with notification to the project team, may liaise directly with HES about monitoring and reporting. The project team will be kept informed of all contact between the retained archaeologist and the archaeological curators.

161. As required by The Crown Estate (2021) guidance, provision for monitoring AEZs will be set out in a method statement agreed between the project team and the Regulator in reference to any relevant regulatory consent. Monitoring will take place relative to the baseline data used to establish the AEZ and continue for the duration agreed between the project team and HES, as set out in the WSI and subsequent method statements.

162. This may include, periodic archaeological reports prepared by the retained archaeologist, to monitor the effectiveness of the AEZs. These reports will review whether any incursions have been made into any of the AEZs and whether there is still an archaeological need for maintaining them. The frequency of the reports would be agreed with the MS through consultation with HES but would likely include reports at key phases of construction and a post-construction report. This would include an assessment of pre-construction geophysical data. If it becomes clear that activities have encroached upon an AEZ, the project team will seek advice from the retained archaeologist.

163. A post-construction monitoring report including the archaeological assessment of post-construction geophysical survey data relative to the baseline data will also assess the effects of any indirect impacts that may have occurred to heritage assets due to the construction of the Project.

164. Based on the results of the initial post-construction review, any further requirements during the operation phase will be agreed in consultation with HES. Further monitoring may only be necessary

if significant changes to coastal and / or offshore processes are identified or if new information relevant to the integrity of archaeologically important items comes to light.

## 1.9 Archaeological Recording, Reporting, Data Management and Archiving

### 1.9.1 Method Statements

165. As noted above, the WSI provides a framework for archaeological investigations. Detailed archaeological method statements will be produced prior to survey or construction work, in order to provide a detailed methodology for each package of development or survey works, as required. Each method statement will be consistent with the WSI, applicable guidance and will reflect the recommended methodologies set out in The Crown Estate (2021) guidance. The objectives for each work package will be set out in the method statement and will take account of applicable objectives from the relevant research frameworks (such as those listed in **Section 1.2.3**) that will be addressed through the delivery of the work.

166. Each method statement will be prepared by the retained archaeologist in consultation with the project team and HES. If the retained archaeologist does not have a sufficient level of experience to undertake archaeological work required for a specific project works, they will appoint a suitably qualified and experienced archaeological contractor to contribute to or prepare the document and undertake the work. Formal approval for each method statement will be required from HES prior to works commencing and in accordance with agreed timescales.

167. As set out in The Crown Estate (2021) guidance, method statements should cover the following key matters, as relevant to each work package:

- specific objectives of archaeological works;
- extent of investigation;
- investigation methodology, to cover:
  - intrusive methods;
  - non-intrusive methods;
  - recording system;
  - finds, including the policy for selection, retention and disposal and provision for immediate conservation and storage;
- environmental sampling strategy;
- form of commission and contractual relationship with the project team;
- relation between licence condition(s), WSI and the method statement;
- context in terms of relevant construction works;
- summary results of previous archaeological investigations in the vicinity;
- archaeological potential;
- anticipated post-investigation actions, including processing, assessment and analysis of finds and samples;
- reporting, including Intellectual Property Rights in the report and associated data, confidentiality and timescale for deposition of the report in a publicly accessible archive;
- timetable, to include investigation and post-investigation actions;

- monitoring arrangements, including monitoring by archaeological curator(s); and
- health, safety, and welfare.

### 1.9.2 Data Management

168. All data management will take place in accordance with the approaches set out in The Crown Estate (2021) guidance.
169. The retained archaeologist has overall responsibility for all matters related to archaeological data management. Issues regarding data storage and management, such as how long and in what format data should be stored, will be confirmed through discussions between the retained archaeologist and the project team. Should a different retained archaeologist be appointed for different stages of a project, the project team should ensure that all relevant data is provided to the new retained archaeologist (for example, shapefiles of AEZs, geophysical anomalies of archaeological potential, areas of high archaeological potential, etc.).
170. On completion of scheme construction, the retained archaeologist will produce an OASIS form for the whole scheme, and copies of all archaeological reports will be attached. When the OASIS form is submitted, it is automatically sent to the relevant HERs, and notification is also sent to HES, so that they may advise the respective competent authority on compliance with relevant consent conditions.

### 1.9.3 Reports

171. Each package of work outlined in the WSI will give rise to one or more archaeological reports, as set out in the method statement relating to the work.
172. Each archaeological report will be consistent with the final Offshore WSI, and The Crown Estate (2021) guidance on reporting. It will demonstrate sufficient planning, recording and data management, with a commitment to archiving and the public dissemination of results. The report will satisfy the method statement for the investigation and will present the project information in sufficient detail to allow interpretation without recourse to the project archive.
173. Archaeological reports will be prepared in accordance with the guidance given in the relevant ClfA's Standards and Guidance documents. Reports will typically include:
- a non-technical summary;
  - the aims and methods of the work;
  - the results of the work including finds and environmental remains;
  - a statement of the potential of the results;
  - proposals for further analysis and publication; and
  - illustrations and appendices to support the report.
174. Each archaeological report will be submitted in draft to the retained archaeologist for submission to the project team. If the report is prepared by the retained archaeologist, it will be submitted directly to the project team. Arrangements and timescales for submitting draft Archaeological Reports by the project team to HES will be set out in the WSI or method statement relating to the work. The timescales will ensure that HES have sufficient time to comment on findings prior to the next stage of archaeological work commencing.
175. On completion of archaeological works relating to construction of the scheme an overarching report on the archaeology of the scheme will be prepared in draft and final copies in accordance with the



methods set out above. This will be in line with a timetable agreed with the project team and HES. The overarching report should serve as an index to, and summary of, the archaeological investigations.

#### **1.9.4 Post-fieldwork Assessment**

176. Where required, provisions will be made for post-fieldwork assessment. This will address where possible, the character, extent, date, integrity, state of preservation and relative quality of any archaeological features or remains that are recorded. Costs will be provided for any further research, analysis, publication, and archiving.
177. Decisions regarding the scope of post-fieldwork assessment will be made by agreement between the project team and HES following submission of investigation reports. This will be based on the possible importance of the results in terms of their contribution to archaeological knowledge, understanding or methodological development.
178. As a minimum, a single assessment may be carried out after the works associated with the scheme have been completed. Such an assessment may be carried out by expanding the overarching archaeological report to include proposals in respect of analysis, publication, and archiving.
179. As set out in The Crown Estate (2021) guidance, an assessment of the potential of the archive for further analysis may include (but is not limited to):
- The dating and dendrochronological assessment of timbers;
  - The conservation of appropriate materials, including the X-raying of metalwork;
  - The spot-dating of all pottery from any investigation. This will be corroborated by scanning of other categories of material;
  - The preparation of site matrices with supporting lists of contexts by type, by spot-dated phase and by structural grouping supported by appropriate scaled plans;
  - An assessment statement will be prepared for each category of material, including reference to quantity, provenance, range and variety, condition, and existence of other primary sources; and
  - A statement of potential for each material category and for the data set will be prepared, including specific questions that can be answered and the potential value of the data to local, regional, and national investigation priorities.

#### **1.9.5 Analysis and Publication**

180. Based on recommendations made by the post-fieldwork assessment, and as agreed with the relevant archaeological curators, mitigation requirements will be satisfied by carrying out analysis and reporting of the post-fieldwork assessment. If appropriate, this may include publication of important results in a recognised peer-reviewed journal or as a monograph.
181. The retained archaeologist should confirm the timeframe for the distribution and/or publishing of reports, in consultation with the project team and HES. This should be included in the WSI or method statement, as appropriate.

#### **1.9.6 Archive**

182. It is accepted practice to keep project archives, including written, drawn, photographic and artefactual elements (together with a summary of the contents of the archive) together wherever possible. Once

their contents are in the public domain these will be deposited in appropriate receiving institutions. Archives will be developed in line with guidance including:

- Standard guidance for the creation, compilation, transfer and deposition of archaeological archives (ClfA 2014b);
- Environmental Guidelines for the Permanent Storage of Excavated Material from Archaeological Sites (Institute of Conservation 1984); and
- Guidelines for the preparation of excavation archives for long-term storage (Walker 1990).

183. The relevant archaeological curators and the archaeological contractor will agree with the receiving institution a policy for the selection, retention, and disposal of excavated material. They will confirm requirements in respect to the format, presentation and packaging of archive records and materials, and will notify the receiving institution in advance of any fieldwork.
184. The timetable for depositing archives with the receiving institution after completion of the post-fieldwork programme will be agreed based on a method statement prepared for the project team by the retained archaeologist. In Scotland, the National Record of the Historic Environment (maintained by CANMORE) will be the repository for maritime fieldwork records.

## 1.10 Protocol for Archaeological Discoveries (PAD)

185. To account for unexpected discoveries of archaeological material during construction, operation and decommissioning, a formal protocol will be required. It is recommended that if any objects of possible archaeological interest are encountered, that they should be reported using a protocol based on the Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate 2014) (ORPAD). This will establish whether the objects are of archaeological interest and allow for appropriate mitigation measures to be recommended where necessary.
186. Activities during which previously unidentified sites or unexpected discoveries of material which may be encountered include:
- Pre-construction surveys, for example:
    - Obstructions on the seabed encountered during geotechnical surveys or grab sampling;
    - Archaeological material within cores or grab samples;
    - Seabed features identified during diver or ROV surveys;
  - Seabed clearance, pre-lay grapnel runs (e.g., finds brought to the surface);
  - Vessel anchoring (e.g., anchor caught on obstruction);
  - Installation of the export cables (e.g., obstruction interactions with plough); and
  - Installation of wind turbine moorings (e.g., obstruction interactions with jack-up legs).
187. This protocol will apply to pre-construction, construction and installation, operation, and maintenance activities in developing offshore renewable energy schemes where an archaeologist is not present on site. The protocol will also apply to operation and maintenance activities. The protocol allows for the effective reporting of discoveries of archaeological material to ensure that advice, concerning measures to address discoveries, is received, and implemented, in a timely and efficient manner.
188. Under the protocol, each vessel or worksite team has a Site Champion, a single person who is responsible for reporting discoveries to a Nominated Contact within the project team. The Nominated Contact will report any new discoveries to the retained archaeologist, or an archaeological contractor engaged to implement the protocol.

189. Individual Site Champions for specific activities will be specified in work package method statements and the identity of the Site Champion will be clearly communicated to work teams, via pre-commencement briefings.
190. The project team will be responsible for ensuring that teams are provided with appropriate training in the application of the protocol and that all staff and contractors are aware of their responsibilities under the protocol. The protocol documentation, including a full description of the methodology and requirements for implementing the protocol will follow that of the ORPAD which can be found via the following web link:
  - [https://www.wessexarch.co.uk/sites/default/files/field\\_file/2\\_Protocol%20For%20Archaeological%20Discoveries.pdf](https://www.wessexarch.co.uk/sites/default/files/field_file/2_Protocol%20For%20Archaeological%20Discoveries.pdf)
191. Training will be provided to construction staff, site crews and work teams about the practical application of the protocol in their day-to-day work through the Implementation Service or by an alternative sufficiently experienced and qualified archaeological contractor. Hard copies of the protocol document will be made available for use on board the construction vessels.
192. Provision will be made by the project team, in accordance with the protocol, for the prompt reporting/recording to HES of archaeological remains encountered or suspected during works.
193. If the find is a wreck within the meaning of the Merchant Shipping Act (1996), then a report will also be made to the Receiver of Wreck. If the find is treasure within the meaning of the Treasure Act (1996) then a report will also be made to the coroner.
194. Following completion of the construction phase, a report will be prepared presenting the results of the protocol implementation during activities and submitted to the MS in a timely manner. If no discoveries are made, a nil discoveries report should be compiled to demonstrate adherence to the scheme.

## 1.11 References

BABAO (2010). British Association of Biological Anthropology and Osteoarchaeology: Code of Practice. [Online] Available: <http://www.babao.org.uk/assets/Uploads-to-Web/code-of-practice.pdf>.

Chartered Institute for Archaeologists (2014a). Standards and guidance for an archaeological watching brief. [Online] Available: [http://www.archaeologists.net/sites/default/files/CIfAS&GWatchingbrief\\_2.pdf](http://www.archaeologists.net/sites/default/files/CIfAS&GWatchingbrief_2.pdf).

Chartered Institute for Archaeologists (2014b). Standards and guidance for the creation, compilation, transfer, and deposition of archaeological archives. [Online] Available: [http://www.archaeologists.net/sites/default/files/CIfAS&GArchives\\_2.pdf](http://www.archaeologists.net/sites/default/files/CIfAS&GArchives_2.pdf).

Chartered Institute for Archaeologists (2014c). Standards and guidance for the collection, documentation, conservation, and research of archaeological materials. [Online] Available: [http://www.archaeologists.net/sites/default/files/CIfAS&G Finds\\_1.pdf](http://www.archaeologists.net/sites/default/files/CIfAS&G Finds_1.pdf).

Gribble, J. and Leather, S. (2011). Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector. Guidance prepared by Emu and issued by COWRIE. [Online] Available: <https://www.historicenvironment.scot/media/2376/2011-01-offshore-geotechnical-investigations-and-historic-environment-analysis-guidance-for-the-renewable-energy-sector.pdf>.

Historic Environment Scotland. (2020). Managing Change in the Historic Environment: Setting. Guidance prepared for Historic Environment Scotland. [Online] Available at <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549>.

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

JNAPC (2006). Code for Practice for Seabed Development. [Online] Available: [http://www.jnipc.org.uk/jnipc\\_brochure\\_may\\_2006.pdf](http://www.jnipc.org.uk/jnipc_brochure_may_2006.pdf).

Mays, S. (2004). Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports. Guidance prepared for Historic England (English Heritage). [Online] Available: <https://www.babao.org.uk/assets/Uploads-to-Web/eh-humanbones-assessments.pdf>.

Mitchell, P.D. and Brickley, M. eds. (2017). Updated guidelines to the standards for recording human remains. Guidance prepared for Chartered Institute for Archaeologists and BABAO. [Online] Available: [https://www.archaeologists.net/sites/default/files/14\\_Updated%20Guidelines%20to%20the%20Standards%20for%20Recording%20Human%20Remains%20digital.pdf](https://www.archaeologists.net/sites/default/files/14_Updated%20Guidelines%20to%20the%20Standards%20for%20Recording%20Human%20Remains%20digital.pdf).

NorthConnect High Voltage Direct Current Cable Infrastructure (2018). UK Environmental Impact Assessment Report. [Online] Available: <https://northconnect.no/uploads/downloads/Britain/HVDC-Cable-Infrastructure-UK-EIAR-Volume-2-Main-Document.pdf>

Plets R., Dix J., and Bates R. (2013). Marine Geophysical Data Acquisition, Processing, and Interpretation – guidance notes. Guidance prepared for Historic England (English Heritage). [Online] Available: <https://historicengland.org.uk/images-books/publications/marine-geophysics-data-acquisition-processing-interpretation/mgdapai-guidance-notes/>.

Robinson, W. (1998). First Aid for Underwater Finds. Archetype Publications Ltd.

The Crown Estate (2021). Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects. Guidance prepared by Wessex Archaeology and issued by The Crown Estate. [Online] Available: <https://www.thecrownestate.co.uk/media/3917/guide-to-archaeological-requirements-for-offshore-wind.pdf>.

The Crown Estate (2014) Protocol for Archaeological Discoveries: Offshore Renewables Projects. Prepared by Wessex Archaeology for The Crown Estate. [Online] Available: [https://www.wessexarch.co.uk/sites/default/files/field\\_file/2\\_Protocol%20For%20Archaeological%20Discoveries.pdf](https://www.wessexarch.co.uk/sites/default/files/field_file/2_Protocol%20For%20Archaeological%20Discoveries.pdf).

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

Wessex Archaeology. (2007). Historic Environment Guidance for the Offshore Renewable Energy Sector. Guidance prepared by Wessex Archaeology and issued by COWRIE. [Online] Available at: [https://www.wessexarch.co.uk/sites/default/files/field\\_file/COWRIE\\_2007\\_Wessex\\_%20-%20archaeo\\_%20guidance\\_Final\\_1-2-07.pdf](https://www.wessexarch.co.uk/sites/default/files/field_file/COWRIE_2007_Wessex_%20-%20archaeo_%20guidance_Final_1-2-07.pdf).

Valetta (1992). European Convention on the Protection of the Archaeological Heritage (Revised). [Online] Available <https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168007bd25>.

### Appendix 1-1 – Gazetteer of UKHO records

UKHO ID	Name	Status	Description	Location
79296	N/A	dead	national HO/authority Notice to Mariners	NorthConnect Parallel Cable Corridor
86424	N/A	dead	national HO/authority Notice to Mariners	Windfarm Site
2267	<i>Zitella</i>	live	The steamship <i>Zitella</i> , under Captain Wilfred Martinson, carrying a cargo of iron ore from Narvik, Norway, to Middlesbrough was stranded on Kinnaird Rock in dense fog on the 6th February 1940, in Boddam Bay. The crew of 33 were all saved.	NorthConnect Parallel Cable Corridor
2266	<i>Cairnavon</i>	live	The steel steamship <i>Cairnavon</i> (formerly named as <i>Baarn</i> ), carrying a cargo of general goods (including coal, coke, and rags) from Leith to Montreal, ran aground 0.5 miles South of Buchan Ness in dense fog on the 1st November 1925.	NorthConnect Parallel Cable Corridor

## Appendix 1-2 – Gazetteer of CANMORE records

CANMORE ID	Type	Name	Description	Location
321988	Maritime Craft	<i>Ernst Friesecke</i>	German cargo vessel built in 1955 which sunk on the 4th March 1972 carrying a cargo of 680 tons of coal	Windfarm Site
309175	Maritime Craft	<i>Ernst Friesecke: North Sea</i>	German cargo vessel built in 1955 which sunk on the 4th March 1972 carrying a cargo of 680 tons of coal	Windfarm Site
202106	Maritime Craft	Unknown: North Sea	Craft	Landfall Cable Corridor
291434	Maritime Craft	Unknown: North Sea	Barge (20th Century) (Possible)	Landfall Cable Corridor
324755	Maritime Craft	Unknown	Craft (Possible)	Landfall Cable Corridor
101744	Maritime Craft	<i>Zitella</i> : Long Haven Bay, Buchan Ness, North Sea	Craft (20th Century), Steamship (20th Century)	NorthConnect Parallel Cable Corridor
101835	Maritime Craft	<i>Cairnavon</i> : Buchan Ness, North Sea	Motor Ship (20th Century), Steamship (20th Century)	NorthConnect Parallel Cable Corridor
207483	Maritime Craft	Aberdeenshire: Dundonnie, North Sea	Steam Trawler (20th Century)	NorthConnect Parallel Cable Corridor
207223	Maritime Craft	<i>Fiery Cross</i> : Long Haven, Buchan Ness, North Sea	Ketch (20th Century)	NorthConnect Parallel Cable Corridor
257960	Maritime Craft	<i>Behrend</i> : Long Haven, Buchan Ness, North Sea	Barque (19th Century)	NorthConnect Parallel Cable Corridor
257941	Maritime Craft	<i>Augusta</i> : Long Haven, Buchan Ness, North Sea	Schooner (19th Century)	NorthConnect Parallel Cable Corridor
255952	Maritime Craft	<i>Hallo</i> : Boddam, North Sea	Brig (19th Century)	NorthConnect Parallel Cable Corridor
292409	Maritime Craft	<i>Lovely Mary</i> : Boddam, North Sea	Sloop (19th Century)	NorthConnect Parallel Cable Corridor

CANMORE ID	Type	Name	Description	Location
292418	Maritime Craft	<i>Britannia</i> : North Sea	Sloop (19th Century)	NorthConnect Parallel Cable Corridor
329265	Maritime Craft	Unknown 1823	Fishing Vessel	NorthConnect Parallel Cable Corridor
326533	Maritime Craft	Unknown 1860	Craft (Possible)	NorthConnect Parallel Cable Corridor
206949	Maritime Craft	<i>Nile</i> : Rattray Head, North Sea	Ketch (19th Century)	St Fergus South Cable Corridor
208451	Maritime Craft	<i>St Fergus</i> : North Sea	Steamship (20th Century)	St Fergus South Cable Corridor
325279	Maritime Craft	Unknown 1946	Drifter	St Fergus South Cable Corridor
326833	Maritime Craft	<i>Bridport</i>	Sloop	St Fergus South Cable Corridor



### Appendix 1-3 – Gazetteer of Aberdeenshire HER records

HER ID	Summary	Type	Location
NK14SW0148	Supposed site of wreck.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0296	Part of the stern of a 'foreign schooner' was washed ashore North of Peterhead on the 15th March 1833.	Wreck site	St Fergus South Cable Corridor
NK14SW0044	During WWII a boat carrying iron ore was run aground here deliberately after a bomb attack in order to save the cargo.	Documentary record only	NorthConnect Parallel Cable Corridor
NK14SW0120	The barque <i>Behrend</i> , with a crew of 11 under Captain Kohler, carrying a cargo of timber from Memel for Belfast, was wrecked at Waterhaven, South of Buchan Ness, on the 22nd October 1875. All hands were lost.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0372	A Pilot Boat was wrecked near Peterhead on the 30th April 1854. No further information.	Wreck site	St Fergus South Cable Corridor
NK14SW0145	The Motor Fishing Vessel <i>Girl Gracie</i> (BCK 139), under Captain Reid, was stranded at Boddam on the 10th August 1945 and was expected to become a wreck.	Wreck site	NorthConnect Parallel Cable Corridor
NK25SW0003	The steel steamship <i>St Fergus</i> was in collision with the <i>Fidra</i> on the 31st December 1940 and sank off Rattray Head.	Wreck site	Landfall Cable Corridor
NK14SW0164	The steamship <i>Zitella</i> , under Captain Wilfred Martinson, carrying a cargo of iron ore from Narvik, Norway, to Middlesbrough was stranded on Kinnaird Rock in dense fog on the 6th February 1940, in Boddam Bay. The crew of 33 were all saved.	Wreck site	NorthConnect Parallel Cable Corridor
NK25SE0003	Wreckage has been reported at this location. No further information.	Wreck site	Landfall Cable Corridor
NK14NW0297	A drifter, on tow, was abandoned and stranded 1.5 miles North of Peterhead on the 31st January 1946.	Wreck site	St Fergus South Cable Corridor
NK14SW0167	A vessel, supposed the <i>Hope</i> , of Aberdeen, and a very large foreign ship, supposed a Dutch or Danish East-Indiaman, were lost near Peterhead in 1803, and all the crew of the latter perished.	Wreck site	NorthConnect Parallel Cable Corridor
NK14SW0159	The brig <i>Hallo</i> , under Captain Larsen, travelling from Grangemouth to Drammen, was wrecked on Dizard Rocks, 1 mile South of Boddam. The crew were lost.	Wreck site	NorthConnect Parallel Cable Corridor
NK14SW0109	The ketch <i>Fiery Cross</i> , under Captain Burrows, carrying a cargo of empty barrels, was stranded at Long Haven, near Buchan Ness, on the 15th February 1900.	Wreck site	NorthConnect Parallel Cable Corridor

Project related

HER ID	Summary	Type	Location
NK14SW0129	The sloop <i>Fisher</i> , under Captain Wood, carrying a cargo of wheat and flour from Dunbar to Aberdeen, was wrecked at Buchan Ness in December 1825. The crew and part of the cargo saved.	Wreck site	NorthConnect Parallel Cable Corridor
NK14SW0160	The sloop <i>Brittania</i> struck rocks and sank one mile South of Boddam on the 15th December 1809.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0186	The steel steam trawler <i>Suzette</i> (A 346) (formerly named as <i>Edward Grey</i> ) was stranded one mile North of Peterhead, on Girdle Reef, on the 11th July 1941.	Wreck site	St Fergus South Cable Corridor
NK14SW0116	The schooner <i>Highlander</i> , under Captain Reid, carrying a cargo of coal from Sunderland to Portgordon, whilst riding in Peterhead Bay during a snowstorm, drove from her anchors on to the rocks near Buchan Ness Lighthouse on the 24th March 1850 and was wreck.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0378	The ketch <i>Nile</i> , with a crew of 4 men under Captain A. Hansen, carrying a cargo of potatoes from Invergordon to West Hartlepool, was stranded about 4 miles S of Rattray Head on the 25th January 1890.	Wreck site	St Fergus South Cable Corridor
NK14SW0165	The steel steamship <i>Cairnavon</i> (formerly named as <i>Baarn</i> ), carrying a cargo of general goods (including coal, coke and rags) from Leith to Montreal, ran aground 0.5 miles South of Buchan Ness in dense fog on the 1st November 1925.	Wreck site	NorthConnect Parallel Cable Corridor
NK14SW0113	The steel steam trawler <i>Aberdeenshire</i> (A234), in ballast, with a crew of 9 under Captain J. Wells, ran aground between Craigscaaw and Dundonnie, approximately 0.5 miles S of Buchan Ness, on the 21st October 1910. The crew were saved.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0331	Wreckage and barrels of tar were washed ashore at Peterhead on the 10th January 1848.	Wreck site	St Fergus South Cable Corridor
NK14NW0355	A Danish-built vessel was reportedly wrecked near Peterhead in March 1786.	Wreck site	St Fergus South Cable Corridor
NK14NW0373	The <i>John</i> was wrecked near Peterhead on the 5th November 1834.	Wreck site	St Fergus South Cable Corridor
NK14SW0150	Wreckage, including part of a hull, was washed ashore at Boddam on the 10th December 1860.	Wreck site	St Fergus South Cable Corridor
NK14SW0158	The sloop <i>Lovely Mary</i> , under Captain Mirk, in ballast, was stranded to the South of Castlehaven, Boddam on the 24th May 1820.	Wreck site	St Fergus South Cable Corridor

HER ID	Summary	Type	Location
NK14NW0181	The iron steamship <i>Trieste</i> (formerly named as <i>Daisy Morris</i> ), carrying a cargo of coal, was stranded on Girdle Shoal, 0.75-mile N of Peterhead, on the 16th July 1918.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0382	A brig, in ballast, was stranded between Boddam and Cruden Bay on the 9th January 1803. No further information.	Wreck site	St Fergus South Cable Corridor
NK14NW0356	A quantity of wreckage was reportedly washed ashore near Peterhead in January 1786.	Wreck site	St Fergus South Cable Corridor
NK14SW0136	On the 25th March 1867, a headboard, marked <i>Margaret West</i> , a board, and part of a galley door were picked up near Buchan Ness. No further information.	Wreck site	NorthConnect Parallel Cable Corridor
NK14NW0374	A fishing vessel was stranded near Peterhead on the 3rd July 1941. No further information.	Wreck site	St Fergus South Cable Corridor
NK14NW0172	The steel steamship <i>Princess Mary</i> , under Captain Kerr, carrying a general cargo, was stranded 0.5 mile North of Peterhead on the 30th May 1908.	Wreck site	St Fergus South Cable Corridor
NK14SW0099	The schooner <i>Marquis of Huntly</i> (or <i>Huntley</i> ), travelling from Aberdeen to Peterhead, was driven ashore on the rocks near Boddam on the 29th November 1817 and became waterlogged. The crew were saved.	Wreck site	NorthConnect Parallel Cable Corridor
NK14SW0119	The schooner <i>Augusta</i> , with a crew of 3 under Captain and Owner R. Wahl, Stettin, carrying a cargo of timber battens from Christiania to Thurso, was wrecked at Long Haven, near Buchan Ness, on the 19th October 1875. One of the crew was lost.	Wreck site	NorthConnect Parallel Cable Corridor
NK25SE0004	A barge was seen adrift off Buchan Ness, bearing SW, Rattray Head bearing NW x W on the 11th December 1919. Presumed to have sunk in this area. No further information.	Wreck site	Cable Corridor



Regional Office Locations

Royal HaskoningDHV is an independent, international engineering and project management consultancy with over 138 years of experience. Our professionals deliver services in the fields of aviation, buildings, energy, industry, infrastructure, maritime, mining, transport, urban and rural development and water.

Backed by expertise and experience of 6,000 colleagues across the world, we work for public and private clients in over 140 countries. We understand the local context and deliver appropriate local solutions.

We focus on delivering added value for our clients while at the same time addressing the challenges that societies are facing. These include the growing world population and the consequences for towns and cities; the demand for clean drinking water, water security and water safety; pressures on traffic and transport; resource availability and demand for energy and waste issues facing industry.

We aim to minimise our impact on the environment by leading by example in our projects, our own business operations and by the role we see in “giving back” to society. By showing leadership in sustainable development and innovation, together with our clients, we are working to become part of the solution to a more sustainable society now and into the future.

Our head office is in the Netherlands, other principal offices are in the United Kingdom, South Africa and Indonesia. We also have established offices in Thailand, India and the Americas; and we have a long standing presence in Africa and the Middle East.



This page is intentionally blank





Flotation Energy Ltd | 12 Alva Street | Edinburgh EH2 4QG | Scotland

Tel: +44 7712 864013 | [enquiries@flotationenergy.com](mailto:enquiries@flotationenergy.com) | [www.flotationenergy.com](http://www.flotationenergy.com)