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Seagreen Offshore Wind Farm Project

Marine Archaeology

Written Scheme of Investigation & Protocol for Archaeological Discoveries

Section 36 Consent Condition 33, OTA Marine Licence 04678/19/0 Condition 3.2.1.2
and Marine Licence MS-00009445 Condition 3.3.1

For the approval of Scottish Ministers

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Consent Plan Overview

Purpose of the Marine Archaeological Written Scheme of Investigation (WSI) & Protocol for Archaeological Discoveries (PAD)

This Marine Archaeological WSI and PAD has been prepared to address the specific requirements of condition 33 of the Section 36 (S36) Consents, condition 3.2.1.2 of the Offshore Transmission Asset (OTA) Marine Licence and condition 3.3.1 of the Alternative Landfall Cable Installation Methodology Marine Licence (collectively referred to as the consents), issued to Seagreen Wind Energy Limited (hereafter referred to as Seagreen) in 2014, as varied, for the Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs) and their associated Offshore Transmission Assets (OTA).

Seagreen Alpha and Seagreen Bravo OWFs and the OTA are collectively referred to as the 'Seagreen Project'. This Marine Archaeological WSI and PAD has been prepared to discharge consent conditions for the Seagreen Project simultaneously.

The overall aims and objectives of the Marine Archaeological WSI and PAD is to ensure that any discovery of archaeological interest is properly and correctly reported as per the condition(s).

All Seagreen Contractors (including their Sub-Contractors) involved in the Seagreen Project are required to comply with this Marine Archaeological WSI and PAD through conditions of contract.

Structure of the Marine Archaeological WSI and PAD

The Marine Archaeological WSI and PAD is structured as follows:

Section 1&2	Provides an overview of the Project and the consent requirements that underpin the content of this report. It also sets out the purpose, objectives and scope of this report and sets out the process for making updates and amendments.
Section 3	Marine Archaeological Written Scheme of Investigation; sets out what the Licensee must do on discovering any marine archaeology for the duration of the Seagreen Project.
Section 4	Protocol for Archaeological Discoveries; sets out the reporting protocol for archaeological discoveries across the Seagreen Project.
Section 5	Demonstrates compliance with the original application and commitments made.
Section 6	Lists the references made within this report.
Appendices	Appendix A – Abbreviations and Definitions Appendix B – Change Management Process Appendix C – Compliance with ES Parameters Appendix D – Summary Mitigation Measures Appendix E – AEZs within the Study Area Appendix F – Geophysical Anomalies of high and mediums potential Appendix H – Preliminary Record Form Appendix I – Types of Finds and Management

Scope of the Marine Archaeological WSI and PAD

This Marine Archaeological WSI and PAD covers, in line with the requirements of the consents conditions, and in line with industry standards (The Crown Estate 2010) and current good practice, the following:

- Sets out the respective responsibilities of Seagreen, their Contractors, the Project ECoW, the Client Representatives and the Seagreen Archaeological Consultant for the duration of the Seagreen Project, and formal lines of communication between these parties and Marine Scotland Licensing and Operation Team (MS-LOT) and Historic Environment Scotland (HES);
- Establishes mitigation procedures, including the implementation of Archaeological Exclusion Zone (AEZ), to seek to avoid damaging archaeological and cultural heritage receptors, as identified during the Environment Statement (ES) for the Development (Seagreen Offshore ES, 2012);
- Proposes measures for mitigating effects upon archaeological material that may be encountered during the Seagreen Project;
- Ensures that, in the event that unexpected archaeological discoveries are made, archaeological advice is sought, and the discovery is subject to archaeological input, review, recording and sampling; and
- Establishes the reporting, publication, conservation and archiving requirements for the archaeological works undertaken in the course of the Seagreen Project.

Marine Archaeological WSI and PAD Audience

This Marine Archaeological WSI and PAD will be submitted for approval, in respect of the S36 Consents, by the Scottish Ministers and, in respect of the OTA and Alternative Landfall Cable Installation Methodology Marine Licences, also by HES. The WSI and PAD will also be submitted for consultation to other stakeholders in relation to monitoring compliance with the specific requirements of the relevant consent conditions

Compliance with this Marine Archaeological WSI and PAD will be monitored by: Seagreen's Ecological Clerk of Works (ECoW); Seagreen's appointed Contractors, Seagreen's Environmental Manager; and the Marine Scotland Licensing and Operations Team (MS-LOT).

Copies of this Marine Archaeological WSI and PAD are to be held in the following locations:

- Seagreen's head office;
- Seagreen's project office and marine coordination centre; and
- at the premises of any Contractor, including the Seagreen ECoW, acting on behalf of Seagreen.
- aboard any vessel engaged in the Wind Farm/Offshore Transmission Asset Works.

1. Introduction

1.1 Consents and Licences

Seagreen Wind Energy Limited (hereafter referred to as 'Seagreen') was awarded Section 36 Consents (S36 Consents) under the Electricity Act 1989 by Scottish Ministers in October 2014 for Seagreen Alpha and Seagreen Bravo Offshore Wind Farms (OWFs), as varied. Marine Licences for Seagreen Alpha and Bravo OWFs, and the Offshore Transmission Asset (OTA) (together the 'Marine Licences') were also awarded by Scottish Ministers in October 2014 as varied under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009. In addition, a Marine Licence was granted in 2019 (and subsequently varied in 2020 and 2021) providing an alternative landfall cable installation method. Together the wind farms Seagreen Alpha and Seagreen Bravo and the OTA collectively comprise 'the Seagreen Project'.

This Marine Archaeological WSI and PAD is seeking to discharge condition 33 of the S36 consents, the WSI requirement set out within condition 3.2.1.2 of the OTA Marine Licence (Ref: 04678/19/0) and condition 3.3.1 of the Alternative Landfall Cable Installation Methodology Marine Licence (Ref: MS-00009445).

1.2 Project Description

The Seagreen Project is located in the North Sea, in the outer Firth of Forth and Firth of Tay region and comprises the OWFs (the WTGs, their foundations and associated array cabling), together with associated infrastructure of the OTA (Offshore Substation Platforms (OSPs), their foundations and the offshore export cable), to facilitate the export of renewable energy to the national electricity transmission grid. The location of the Seagreen Project is shown in Figure 1.0

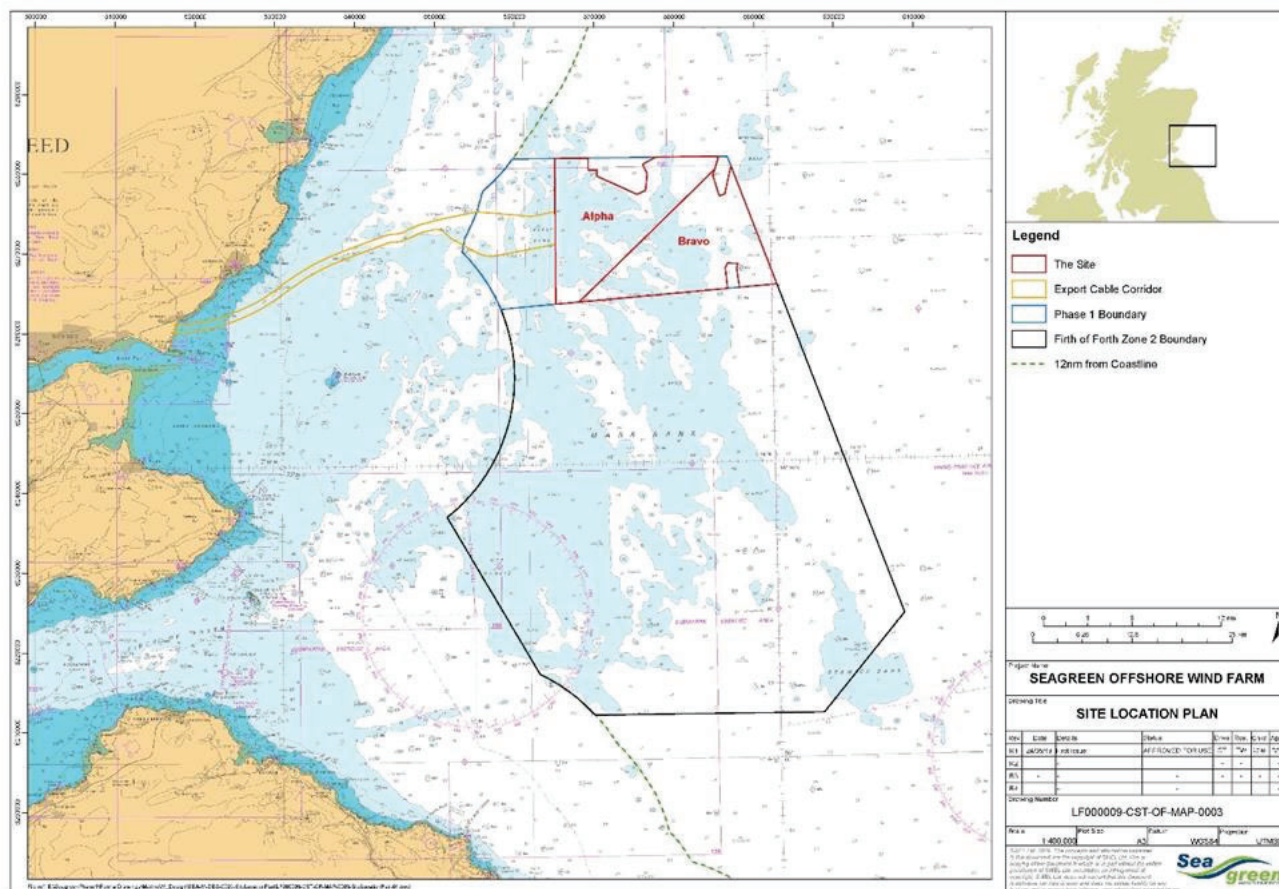


Figure 1.0 - Project Location

1.3 Consent and Licence Requirements

The Seagreen Project benefits from the following consents:

- the S36 Consents;
- the Wind Farm Marine Licences;
- the OTA Marine Licence; and
- the Alternative Landfall Cable Installation Methodology Marine Licence,

This Marine Archaeological WSI and PAD has been prepared to discharge condition 33 of the S36 Consents, condition 3.2.1.2 of the OTA Marine Licence and condition 3.3.1 of the Alternative Landfall Cable Installation Methodology Marine Licence, as set out in Table 1.1. The PAD is equivalent to the MARP (Marine Archaeology Reporting Protocol), requested for submission as per condition 33 of the S36 Consents.

Table 1.1 - Consent Conditions to be discharged by this WSI and PAD

Consent Document	Condition Reference	Condition Text	Reference to relevant Section of this WSI / PAD
Section 36	Condition 33	<p>The Company must, no later than 6 months prior to the Commencement of the Development, submit a Marine Archaeology Reporting Protocol (MARP) which sets out what the Company must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Development, in writing, to the Scottish Ministers for their written approval.</p> <p>Such approval may be given only following consultation by the Scottish Ministers with any such advisors as may be required at the discretion of the Scottish Ministers.</p> <p>The Reporting Protocol must be implemented in full, at all times, by the Company.</p> <p>Reason: To ensure any discovery of archaeological interest is properly and correctly reported.</p>	Section 4
OTA Marine Licence	3.2.1.2(b)	<p>With reference to the EMP required for the Project...</p> <p>It must set out the roles, responsibilities and chain of commands of any Licensee personnel, contractors or sub-contractors in respect of environmental management for the protection of environmental interests during the construction and operation of the Works. It must address, but not be limited to, the following over-arching requirements for environmental management: ...</p> <p>b) A completed Written Scheme of Investigation (WSI) approved by Historic Scotland</p>	Section 3
Alternative Landfall Cable Installation Marine Licence	3.3.1	<p>The Licensee must, no later than three months prior to the Commencement of the Works, submit in writing, a PAD and a WSI which sets out what the Licensee must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Works, to the Licensing Authority for its written approval. Such approval may be given only following consultation by the Licensing Authority with HES and any such advisors as may be required at the discretion of the Licensing Authority. Commencement of the Works cannot take place until such approval is granted. The Reporting Protocol must be implemented in full, at all times, by the Licensee.</p>	Section 3 and 4

1.4 Linkages with other consent plans and Consent Conditions

The Marine Archaeological WSI and PAD will necessarily be consistent with a number of other consent plans and consent conditions. These are set out in Table 1.2 with details of the linkages presented and cross referenced as appropriate.

It should be noted that information is not repeated across consent plans, rather, where pertinent information is available in linked consent plans, the relevant consent plans are referred to. The plans are not required for approval of the Marine Archaeological WSI and PAD but are provided for ease of reference.

Table 1.2 - Linkages with other consent plans and consent conditions

Reference	Linkage with the Marine Arch WSI and PAD	Cross-reference in this WSI and PAD
<p>Environmental Management Plan (EMP) (required by OTA Marine Licence Condition 3.2.1.2)</p> <p>An EMP is also required under Section 36 Consent Condition 14.</p>	<p>Sets out the over-arching framework for on-site environmental management during the phases of works.</p> <p>It must set out the roles, responsibilities and chain of commands of any Licensee personnel, contractors or sub-contractors in respect of environmental management for the protection of environmental interests during the construction and operation of the Works. It must address, but not be limited to, the following over-arching requirements for environmental management: ...</p> <p>b) A completed Written Scheme of Investigation (WSI) approved by Historic Scotland</p>	<p><i>Section 3 – Written Scheme of Investigation</i></p>
<p>ECoW Required by (Seagreen Alpha S36 Condition 29 / Seagreen Bravo S36 Condition 29 / Seagreen OTA Marine Licence, Condition 3.2.2.12)</p>	<p>The Ecological Clerk of Works (ECoW) responsibilities include;</p> <p>b. provide advice to the Company on compliance with consent conditions, including the conditions relating to the CMS, the EMP, the PEMP, the OPS (if required), the CaP and the VMP.</p> <p>c. Monitor compliance with the CMS, the EMP, the PEMP, the PS (if required), the CaP and the VMP;</p>	<p><i>Sections 2 to 6</i></p>

1.5 Construction and O&M management

Design embedded measures and adherence to good practice and guidance will be implemented for the duration of the Seagreen Project. The implementation of such measures will be managed by the Contractor Environmental Advisors (CEAs), appointed by each key contractor throughout the duration of the construction period.

The relevant CEA will provide progress reports to the Seagreen Ecological Clerk of Works (ECoW) who will oversee and monitor compliance with consent conditions. The ECoW will be an independent party and will provide regular reporting on compliance monitoring, good practice and mitigation measures, both to the Seagreen Environmental Compliance Manager and to MS-LOT throughout pre-construction and construction phases of the Seagreen Project. The role of the Seagreen Environmental Compliance Manager is to oversee compliance monitoring across the project.

Full details of the construction management procedures, including environmental compliance, monitoring and reporting and roles and responsibilities are provided in the Seagreen Offshore Construction Environmental Management Plan (Offshore CEMP).

A subsequent Operations and Maintenance Plan (OMP) and Operational Environmental Management Plan will be developed and submitted to MS-LOT for approval which will provide full details of O&M management procedures.

It is anticipated that this document will be updated prior to the O&M phase, but the general methodology underpinning the application of the mitigation procedures, and the commitment to the application of this mitigation, as described in this document, will remain relevant throughout the project lifespan

1.6 Updates and Amendments

Updates to this Marine Archaeological WSI and PAD might be required, for example, due to changes to the proposed construction methodology or O&M activities (that require additional management or mitigation measures, or changes to measures already proposed), new marine archaeology sensitivities identified by monitoring, emerging guidance, or new legislative requirements.

The change management process for any updates required to the Marine Archaeological WSI and PAD, including resubmission of consent plans for approval, is outlined in **Appendix B**.

2. Scope and Objectives of the Marine Archaeological WSI and PAD

This Marine Archaeological WSI and PAD has been prepared to address the specific requirements of the relevant conditions attached to the consents issued to Seagreen and applies to all activities for the duration of the Seagreen project.

As set out above in the Consent Plan Overview, the overall objective of this document is to set out what Seagreen and their Contractors must do on discovering any marine archaeology for the duration of the Development. This is to ensure that any discovery of archaeological interest is properly and correctly reported.

The primary mitigation strategy for the protection of marine archaeology and cultural heritage receptors *in situ* is through avoidance, by implementing site-specific Archaeological Exclusion Zones (AEZs).

All Seagreen personnel and Seagreen Contractors (including their Sub-Contractors) involved in the Seagreen Project must comply, as a minimum with the Marine Archaeological WSI and PAD.

2.1 Structure of this document

The remainder of this document sets out information required to fulfil the criteria of the conditions of the S36 Consent and OTA Marine Licence as set out in Section 1.1. The Marine Archaeological WSI and PAD has been structured accordingly as set out Table 1.3.

Table 1.3 - Structure of the Marine Archaeological WSI and PAD

Section	Title	Overview
3	Marine Archaeological Written Scheme of Investigation	Sets out the Licensee's approach to: <ul style="list-style-type: none"> protecting known marine archaeological assets; Potential marine cultural heritage assets; Additional provisions on discovering any marine archaeology for the duration of the Seagreen Project; and, Standard provisions for post-excavation sampling, conservation and assessment of finds and environmental material
4	Protocol for Archaeological Discoveries (PAD)	This Protocol will satisfy requirements relating to the reporting of archaeological discoveries across the duration of the Seagreen Project.
5	Compliance with the Environmental Statement	Demonstrates compliance with the original application and commitments made.

3. Marine Archaeological Written Scheme of Investigation

3.1 Introduction

This WSI sets out the procedures that must be followed in order to protect marine archaeology and cultural heritage receptors throughout the duration of the Seagreen Project. The archaeological mitigation strategy is based on that presented in the Seagreen 2012 Offshore Environmental Statement (ES) (original ES) (further details provided in Appendices C and D) and is compliant with relevant legislation including the *Merchant Shipping Act (1995)* and *Protection of Military Remains Act (1986)*.

This WSI is based on baseline geophysical survey data gathered for the original ES and updated with recent information from the United Kingdom Hydrographic Office (reviewed 02/08/2019). This is a live dataset that incorporates wrecks and unidentified obstructions in UK waters, and this has been used to verify the data assessed in the original ES.

These assessments have been used to identify and delineate marine archaeology and cultural heritage receptors and the appropriate buffer zones around these receptors forming the AEZs.

The gazetteer of known marine archaeological and cultural heritage receptors initially identified in the original ES and subsequently updated and synthesised with UKHO data can be found in **Appendix E**. The consolidated gazetteer has been renumbered with Wessex Archaeology (WA) IDs beginning at 2000.

Appendix E also lists AEZs established around receptors identified during subsequent survey activities (with Coracle Archaeology (CA) IDs). Details are illustrated in the supporting **Figures 2-4**. The gazetteer of high and medium geophysical anomalies adapted from the original archaeological assessment as part of the original ES is presented in **Appendix F**.

3.2 Summary of known and potential archaeological receptors

3.2.1 Known Maritime Receptors

The review of UKHO data for the Study Area (OWF site boundaries, the Offshore Export Cable Route, plus a 1 km buffer as per the original ES) included 14 records, of which one was new since the original ES. This record was for a lost part of a geotechnical drilling rig and so was not included within the archaeological gazetteer. Five further records have not been included within the gazetteer for the Study Areas: this is due to them being Recorded Losses and these were found to have no corresponding geophysical anomalies in the original ES. These records have the potential to be within the Study Areas, but their positions and survival have not been confirmed in previous surveys. For this WSI, eight wrecks (**WA 2001, 2004, 2006, 2007, 2008, 2021, 2024 & 2031**), some with associated debris have been identified and charted within the Study Areas. These were presented in the original ES and verified by the UKHO data. These are presented in **Appendix E** and shown in **Figures 2-4**.

During UXO identification prior to the commencement of offshore construction works, further archaeological receptors were identified that had not previously been identified through UKHO records or geophysical detection. The finds were reported and where necessary, appropriate AEZs established around the receptors, following discussion with Historic Environment Scotland. Further details can be found in **Appendix E**.

There are no Designated wrecks within the boundaries of the OWF or the Offshore Export Cable Route.

3.2.2 Known Aviation Receptors

One receptor, consisting of the remains of a possible aircraft was noted in the geophysical side-scan survey (**WA 2032**), in the original ES having a small magnetic signature, partially buried and broken up. Further details of this receptor can be found in **Appendix E**.

3.3 Maritime and Aviation Archaeological Potential

3.3.1 Geophysical Anomalies of High or Medium Archaeological Potential

In addition to known archaeological receptors, the original ES identified 55 maritime receptors of high or medium archaeological potential within the marine geophysical surveys, some of which correspond with the known wrecks verified by the UKHO data and listed above. These were given individual AEZs of either 50 m or 100m depending on the potential of the anomaly. These anomalies are presented in Table 1.5.

Table 1.5 - High and Medium potential geophysical anomalies (from Headland Archaeology 2012)

Anomaly Classification	Number of Anomalies	Potential	Proposed AEZ
Wreck	11	High	100m
Wreck	1	Medium	50m
Wreck Anomaly	2	High	100m
Wreck Debris	1	High	100m
Possible Anchor	1	Medium	50m
Possible Aircraft	1	High	100m
Possible Debris	1	Medium	50m
Linear Debris	7	Medium	50m
Debris	2	High	100m
Debris	23	Medium	50m
Debris on Seabed	1	Medium	50m
Depression/buried Debris	1	Medium	50m
Group Possible Debris	1	Medium	50m
Curvilinear Feature	1	Medium	50m
Buried Debris	1	Medium	50m
Total	55		

Following re-assessment of the receptors identified in the original ES using the updated UKHO data it was clear that some groups of receptors and wreck locations should be grouped (consolidated), to simplify effective mitigation through avoidance. **In accordance with the original ES, and the additional finds made subsequently, a consolidated total of 38 AEZs have been proposed in this WSI (see Appendix E).**

3.3.2 Aviation Potential

The original ES reported one record of aviation potential located within the Development Area, described in that document as an “obstruction/aircraft”. This was a Recorded Loss and was never located during salvage operations or during later surveys, and therefore is reclassified as a Recorded Loss in this WSI.

3.4 Potential Impacts

3.4.1 Direct

Direct impacts include both direct damage to archaeological deposits and material and the disturbance or destruction of relationships between deposits and material and their wider surroundings.

Potential direct impacts during construction could occur from:

- Installation of turbine foundations;
- Installation of offshore substation foundation and platform;
- Installation of wave buoys;
- Placing of scour protection;
- Installation of inter array, interconnector and export cabling; and,
- Legs of jack-up crane vessel and/or anchors of other vessels.

Potential direct impacts during operation could occur from:

- Anchors of vessels deployed during periodic overhauls and scheduled and unscheduled maintenance; and,
- Legs of jack-up crane vessels in the event of turbine component replacement.

3.4.2 Indirect

Indirect impacts can include changes to water quality, currents, sediment transport and erosion patterns during installation or maintenance of foundations and cables. Potential indirect impacts comprise:

- Increased erosion to submerged prehistoric archaeology, shipwrecks and crashed aircraft uncovered as a result of changes in scour or sedimentation; and,
- Increased protection afforded to submerged prehistoric archaeology, shipwrecks and crashed aircraft buried as a result of changes in scour or sedimentation.

3.5 Mitigation

3.5.1 Overview

The Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects (Crown Estate 2010) and COWRIE (Wessex Archaeology 2007) both put forward mitigation measures to avoid, offset or minimise the adverse effects of a development on marine archaeological and cultural

heritage receptors. Seagreen propose to adopt the mitigation measures advised in these documents as set out below.

3.5.2 Archaeological Exclusion Zones (AEZs)

AEZs which are outlined in this document will be the principal means used to preserve *in situ* any sites or deposits of potential or known archaeological interest. AEZs will be approved by the Archaeological Curators (Historic Environment Scotland for heritage matters offshore). In all cases, currently known marine archaeological and cultural heritage receptors will be avoided by establishment of AEZs. The detailed design of the project has incorporated avoidance of these AEZs and AEZs will be respected by any activities that may disturb the seabed.

AEZs are required for all known sites of high, or medium potential where the location of the archaeological receptor is known, or where the receptor has been at one time identified by geophysical/diver/ROV surveys. AEZs are formed by establishing a buffer around the known extents of wreck sites, or around geophysical anomalies for which the available evidence suggests that there could be archaeological material present on the seabed. AEZs are site-specific depending on the extent of the site or wreckage and are based on their archaeological potential.

All AEZs will be established in consultation with Historic Environment Scotland (HES) and will apply to any activities that may disturb the seabed. As previously stated, in accordance with the original ES, a consolidated total of 38 AEZs have been proposed in this WSI (see **Appendix E**). AEZs will be in place for the entire duration of the Project, unless otherwise altered (see Section 3.5.5).

3.5.3 100 m radius AEZs

The 2012 ES ascribed 12 archaeological receptors with 100 m radius AEZs as these were assessed to be of high potential. These were verified as being consistent with the 'live' wrecks charted by the UKHO during the development of this WSI.

As part of the consolidation of receptors, these receptors have been grouped, resulting in nine AEZs. These nine known sites include eight wrecks (**WA 2001, 2004, 2006, 2007, 2008, 2021, 2024 and 2031**) and one probable aircraft wreck (**WA 2032**) and have been assessed as of high sensitivity.

3.5.4 50 m radius AEZs

The 2012 ES ascribed 40 archaeological receptors with 50 m radius AEZs as these were assessed to be of medium potential. Five (consolidated to **WA 2007, 2031 and 2024**) were verified as being consistent with the 'live' wrecks charted by the UKHO during the development of this WSI.

As part of the consolidation of receptors within this WSI, these receptors have been grouped, resulting in 24 AEZs. These receptors consist of geophysical anomalies, comprising of areas of debris of high and medium potential.

3.5.5 15 and 10 m radius AEZs

Seven additional archaeological receptors were identified during UXO identification works. AEZs with 15 m or 10 m radius were established around these receptors. Three such receptors (CA 005, 006 and 007) were

considered to form part of a single debris field feature and were therefore grouped, resulting in five additional AEZs.

3.5.6 Altering Archaeological Exclusion Zones

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

The alteration of AEZs will only be undertaken with the agreement of Archaeological Curators. Following alteration, a new plan giving details of the AEZs will be drawn up and issued to MS-LOT and the ECoW, as described in the flowchart presented in **Appendix B**.

Seagreen will notify its contractors of AEZs and of any alteration or removal of AEZs.

3.5.7 Monitoring of AEZs

The effectiveness of the AEZs will be periodically monitored by the Seagreen Archaeological Consultant in consultation with the Seagreen Client Representative, Construction Environmental Advisor (CEA) and ECoW. If deemed necessary, these may be monitored by periodic visits to the survey vessels by the Seagreen Archaeological Consultant, the frequency of which will be decided when a programme of works is established.

If it becomes apparent that activities have taken place accidentally within any AEZ, the party responsible will obtain advice from the Seagreen Archaeological Consultant in accordance with the Protocol for Infringement of Archaeological Exclusion Zone flow chart set out in **Appendix G**.

3.5.8 Temporary Exclusion Zones

If new finds of archaeological importance come to light during the project, Offshore Renewables Protocol for Archaeological Discoveries (ORPAD) provides for Temporary Exclusion Zones (TEZs) to be introduced when discoveries are made (this is further detailed in Section 4). These operate in a similar way to the fixed AEZs, but may be lifted following advice, or may form the basis of an AEZ in the event that further disturbance should be avoided. These will be put in place with the agreement of the Archaeological Curators.

3.5.9 Scheme of Investigations for further archaeological works

If further archaeological works are required, individual method statements for each package of works will be produced, to detail the nature of archaeological works to be carried out. This will be based on archaeological good practice and guidance for offshore development including:

- Code of Practice for Seabed Development (Joint Nautical Archaeology Policy Committee (JNAPC), 2006);
- Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate, 2014);
- Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects. Guidance issued by The Crown Estate, 2010;

- COWRIE Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy, 2008.

Additional assessment of the receptors identified in this WSI may be undertaken prior to construction in order to confirm character and relative value. The methodologies for assessing the features could include:

- Marine geophysical investigations;
- Marine geoarchaeological investigations;
- Archaeological assessment of UXO, ROV or diver survey data;
- Archaeological investigations using divers and/or ROVs; and,
- Archaeological watching briefs.

Further guidance can be found in the Model Clauses (TCE, 2010). Should any further surveys be planned, archaeological advice will be included at the planning stage, to maximise results for archaeological assessment.

3.5.10 Unexpected Discoveries

Should any previously unknown sites or material be encountered during works, measures will be taken to reduce the level of impact. Unexpected material that may be encountered during the course of the Seagreen Project will be addressed through adherence to ORPAD (**Section 4**).

4. Protocol for Archaeological Discoveries (ORPAD)

4.1 Introduction

Unexpected archaeological discoveries that come to light during the of the Project will be addressed by the implementation of the Protocol for Archaeological Discoveries: Offshore Renewables Project (ORPAD).

The aim of ORPAD is to reduce any adverse effects of the development on the historic environment, by enabling people working on the development to report archaeological discoveries in a manner that is both convenient to their everyday work and effective with regard to curatorial requirements.

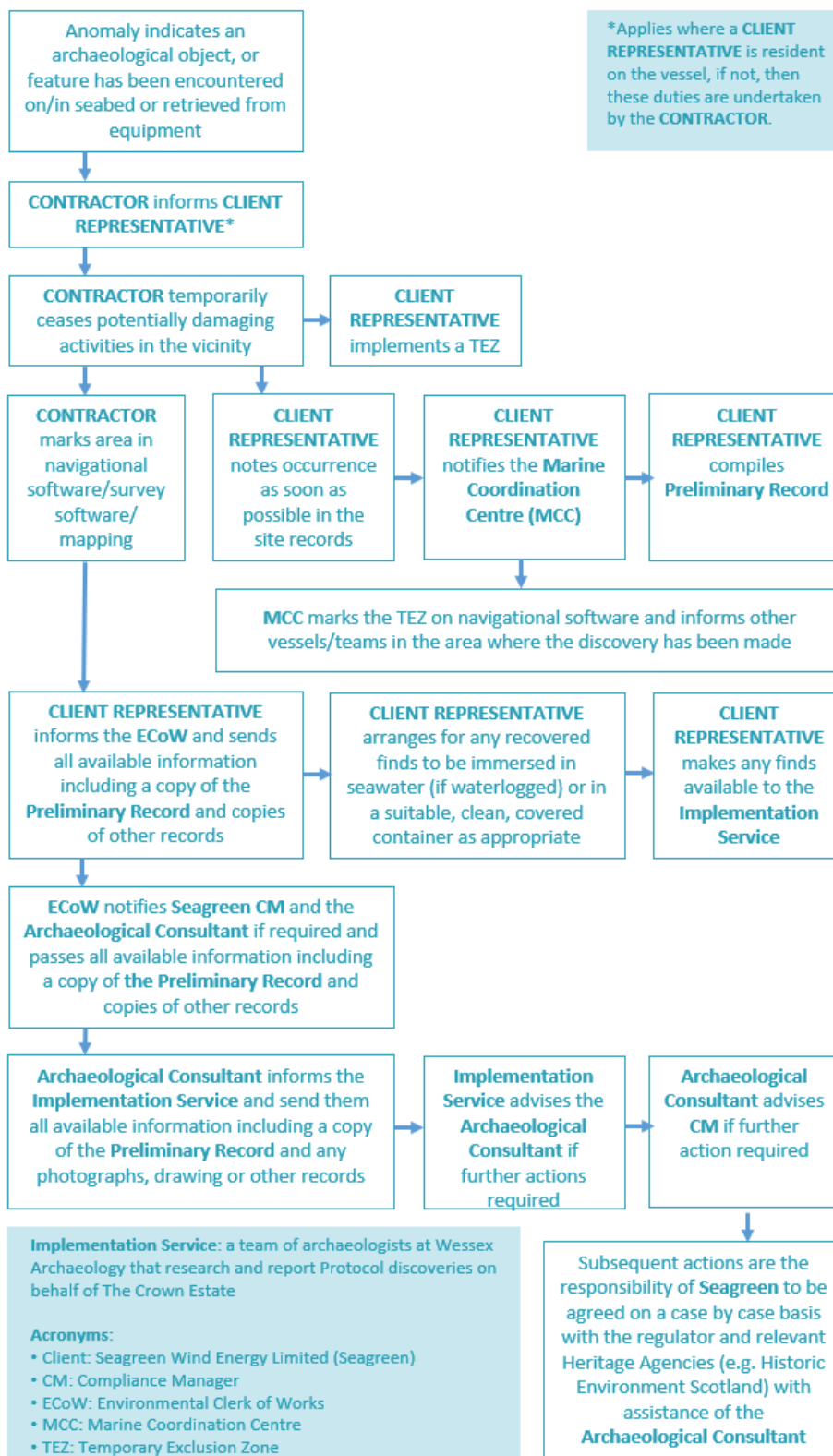
As the ORPAD is designed to operate when an archaeologist is not present, it is recognised that for the protocol to be effective, key Seagreen and Contractor personnel are required to receive Protocol Awareness training.

The flowchart presented in section 4.2 describes the protocol to be undertaken in the event of a discovery for the Seagreen project.

Please also note an example of a Preliminary Record Form (TCE, 2014) for recording preliminary finds is provided in **Appendix H**.

4.2 Seagreen ORPAD (overleaf)

Protocol for Reporting Finds of Archaeological Interest



4.3 Types of Finds and Management

Finds are considered here to mean all forms of artefacts that can be found on the seabed. To be an artefact, the item must have been made, modified, used or transported by people i.e. their presence on the seabed is 'artificial' or 'cultural' rather than 'natural'. Further information and guidelines on the identification of finds of archaeological interest are presented in **Appendix I**

For legal purposes, finds from the seabed fall into two categories. Wreck has a specific legal definition broadly encompassing materials that come to be on the seabed as a direct result of once being aboard or part of a vessel or aircraft. Statutory law relating to wreck is set out principally in the *Merchant Shipping Act* 1995, applicable to territorial waters out to twelve nautical miles. The common law supplements the statutory position relating to wreck.

All other finds are referred to as 'non-wreck'. 'Non-wreck' includes things such as prehistoric flint artefacts that were lost on land that has since been inundated by rising sea level, or artefacts that have been eroded from sites on the shore. The law applicable to 'non-wreck' is largely common law, to be found in legal cases.

4.4 Legislation and Guidance

For sites or finds of archaeological and cultural heritage interest discovered in offshore waters, principles of good practice for the protection of archaeological remains set out in international legislation and guidance are relevant. Such legislation and guidance includes:

- The United Nations Convention on the Law of the Sea 1982 (UNCLOS 1982);
- The ICOMOS Charter (1996) on the Protection and Management of Underwater Cultural Heritage;
- The Valletta Convention which was ratified by the UK Government in 2000, came into force in 2001.
- The UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001 (UNESCO 2001).

4.5 Roles and Responsibilities

The following Table 1.6 sets out the high-level roles and responsibilities, as also further detailed in the Seagreen ORPAD in section 4.2 above.

Table 1.6 - Roles and Responsibilities

Role	Company	Responsibilities
Developer	Seagreen	<p>The responsibility for implementing the WSI rests with the Seagreen Developer and their Contractors.</p> <ul style="list-style-type: none"> • Seagreen personnel will familiarise themselves with the contents of this WSI/PAD including but not limited to their Project Management, Client Representatives, Ecological Clerk of Works (ECoW), Environmental Manager,

Role	Company	Responsibilities
		<p>Contractors. All Seagreen Works personnel are required to follow this WSI, any AEZs that may be implemented, and the Protocol.</p> <ul style="list-style-type: none"> Seagreen personnel will seek advice from the Seagreen Archaeological Consultant and for curatorial advice with the Archaeological Curators supported by the Seagreen Archaeological Consultant as appropriate. Seagreen will commission and consult the Seagreen Archaeological Consultant during the planning stages for any further work. Seagreen will ensure that the Seagreen Archaeological Consultant is provided with all relevant project datasets, to ensure that they are in an informed position to advise the project team. Project strategies related to marine archaeology and cultural heritage resources will be developed in consultation between Seagreen and the Archaeological Consultants and thereafter communicated to all relevant parties by the Seagreen Compliance Manager.
Contractors and Sub-Contractor	TBC	All relevant Contractors engaged in the project shall comply with this WSI and implement the Protocol.
Seagreen Archaeological Consultant	TBC	<p>The Seagreen Archaeological Consultant will oversee archaeological mitigation to provide consistency throughout the project, as required. The Seagreen Archaeological Consultant is responsible for:</p> <ul style="list-style-type: none"> advising Seagreen and their Client Representative on necessary interaction with third parties with archaeological interest, and the Archaeological Curator(s); provide archaeological advice at the planning stages for any further archaeological investigations; will act as the first contact for any unexpected archaeological discoveries; will produce reports compliant with ClfA standards for approval by Seagreen and the Archaeological Curator(s); will create an OASIS online record to be integrated into the relevant local and national records and published through the Archaeological Data Service ArchSearch catalogue; and will prepare project archives in consultation with the appropriate repository/ museum;

Role	Company	Responsibilities
Archaeological Curators	Historic Environment Scotland (HES) and Aberdeenshire Council Archaeology Service (ACAS)	HES is the Archaeological Curator providing advice for the historic environment within the Scottish inshore and offshore marine planning areas. Advice will be sought from ACAS for the historic environment falling above Mean Low Water Mark (MLWM).

5. Compliance with the ES and Environmental Report (ER)

The relevant conditions of the S36 Consents and the OTA Marine Licence requires that the Seagreen Project be constructed and operated in accordance with the methods assessed in the ES and that related mitigation proposed in the ES are to be delivered. Similarly the Alternative Landfall Cable Installation Methodology requires that works are carried out in accordance with the Licence, the Application, and the supporting environmental information submitted in support of this Application (i.e the Environmental Report).

As stated previously, it is anticipated that this document will be updated prior to the O&M phase to reflect O&M specific conditions.

5.1 Compliance with Construction Methods Assessed in the ES and ER

The ES for the Seagreen project described the range of methods that could be applied during the construction of the Project. This was presented as a 'Rochdale Envelope' incorporating a variety of options in relation to the development design and the approach to installation.

Since award of consent for the Project, the design of the Project and the approach to installation has been refined, as set out in the relevant consent plans. To demonstrate compliance, with those methods assessed within the ES and Alternative Landfall Cable Installation Methodology ER , **Appendix C** provides a tabulated comparison of project construction parameters and methodologies as presented in the ES and ER with this Marine Archaeological WSI and PAD.

5.2 Delivery of Construction-related Mitigation Proposed in the ES

The ES and ER for the Seagreen project detailed a number of mitigation commitments specific to construction and installation activities. **Appendix D** presents the commitments made by Seagreen in the ES and ER to mitigation measures relative to construction methods and processes set out in this Marine Archaeological WSI and PAD. The table provides details of the commitments and a cross-reference to where each commitment is implemented.

A complete register of the mitigation, management and monitoring commitments made in the ES, required by consent conditions is set out in the commitments registers included as part of the Project CEMP.

6. References

Table 1.7 sets out Consent Plans for the Seagreen project which are relevant to this WSI and PAD. It is followed by a list of other reference documents.

Table 1.7 - Seagreen Document References

SWEL Document Number	Title
LF000009-CST-OF-PLN-0014	Offshore Construction Environmental Management Plan
LF000009-CST-OF-PRG-0002	Offshore Construction Programme
LF000009-CST-OF-PLN-0007	Offshore Navigational Safety Plan
LF000009-CST-OF-PLN-0003	Offshore Piling Strategy
LF000009-CST-OF-PLN-0009	Offshore Transmission Assets Cable Plan
LF000009-CST-OF-MST-0002	Offshore Transmission Assets Construction Method Statement
LF000009-CST-OF-PLN-0008	Offshore Wind Farm Cable Plan
LF000009-CST-OF-MST-0001	Offshore Wind Farm Construction Method Statement
LF000009-CST-OF-PLN-0006	Offshore Vessel Management Plan
LF000009-HSE-MA-PRO-0008	Incident Reporting

ADS 2013 *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service & Digital Antiquity Guides to Good Practice

Brown, D H 2011 *Archaeological archives; a guide to best practice in creation, compilation, transfer and curation*, Archaeological Archives Forum (revised edition)

Chartered Institute for Archaeologists (CIfA) 2014a *Standard and guidance for archaeological field evaluation*. Reading, CIfA

CIfA 2014b *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. Reading, CIfA

CIfA 2014c *Standard and guidance for an archaeological watching brief*. Reading, CIfA

CIfA 2014d *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*. Reading, CIfA

CIfA 2014e *Code of Conduct*. Reading, CIfA

CIfA 2014f *Regulations for Professional Conduct*. Reading, CIfA

CIfA 2014g *Standard and Guidance for nautical archaeology recording and reconstruction*. Reading, CIfA

CIfA 2017 *Updated Guidelines to the Standards for Recording Human Remains*. Reading, CIfA

Crown Estate, The 2010 *Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects*. Published guidance by Wessex Archaeology Ref 73830.

Crown Estate, The 2014 *Protocol for Archaeological Discoveries: Offshore Renewables Projects*. Published by Wessex Archaeology, Salisbury, on behalf of The Crown Estate. (2nd issue, July 2014 (revised))

Department of Energy & Climate Change (DECC) (2011), *Overarching National Policy Statement for Energy (EN-1)*

Department of Energy & Climate Change (DECC) (2011), *National Policy Statement for Renewable Energy Infrastructure (EN-3)*

Department for Environment, Food and Rural Affairs (DEFRA) 2009 *Our Seas – A Shared Resource: High Level Marine Objectives*;

English Heritage (now Historic England) 1998 *Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers*;

English Heritage (now Historic England) 2002 *Military Aircraft Sites: Guidance on their Significance and Future Management*;

English Heritage (now Historic England) 2008 *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment*;

English Heritage (now Historic England) 2011 *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation*. Second Edition

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

Gribble J and Leather S 2011 *Offshore Geotechnical Investigations and Historic Environment Analysis: Guidance for the Renewable Energy Sector*. Prepared for EMU Ltd. For COWRIE 2011

Headland Archaeology 2012 *Firth of Forth Round 3 Offshore Wind Farm Phase 1 Chapter 17 Maritime Cultural Heritage Baseline: Technical Appendix 6.2.3.37*

- Historic England 2012 *Ships and Boats: Prehistory to Present – Designation Selection Guide*;
- Historic England 2015a *Management of Research Projects in the Historic Environment: the MoRPHE project managers' guide*. Swindon, Historic England
- Historic England 2015b *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*. Swindon, Historic England
- Historic England 2015c *Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning: 2*.
- Historic England 2016 *Preserving Archaeological Remains: Decision-taking for Sites under Development*
- Joint Nautical Archaeology Policy Committee 2006 *Code of Practice for Seabed Development, JNAPC*
- McKinley, J I 2013 'Cremation: Excavation, Analysis, and Interpretation of Material from Cremation-Related Contexts' in S Tarlow and L Nilsson Stutz (eds) *The Oxford Handbook of the Archaeology of Death and Burial*. Oxford University Press 147-171
- McKinley, J I and Roberts, C 1993 *ClfA Technical Paper No 13 Excavation and post-excavation treatment of cremated and inhumed human remains*.
- Museums and Galleries Commissions 1992 *Standards in the Museum Care of Archaeological Collections*
- Oxford Archaeology and George Lambrick Archaeology and Heritage *Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy*. Commissioned by COWRIE Ltd. (project reference CIARCH-11-2006. COWRIE 2008.
- Robinson, W 1998 *First Aid for Underwater Finds*. Archetype Publications Ltd
- Seagreen 2012 *Firth of Forth Round 3 Offshore Wind Farm Phase 1 Environmental Statement: Chapter 17 Maritime Cultural Heritage*.
- Society of Museum Archives (SMA) 1993 *Selection, Retention and Dispersal of Archaeological Collections*
- Society of Museum Archives (SMA) 1995 *Towards an Accessible Archaeological Archive*
- United Kingdom's Institute for Conservation (UKIC) 1984 *Conservation Guidelines No 2*
- Watkinson, D and Neal, A V 1998 *First Aid for Finds*. United Kingdom Institute for Conservation and Rescue: The British Archaeological Trust
- Wessex Archaeology 2007 *Historic Environment Guidance for the Offshore Renewable Energy Sector*, Published Guidance Note.
- Wessex Archaeology and The Crown Estate 2010 *Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects*

Appendix A – List of Abbreviations and Definitions

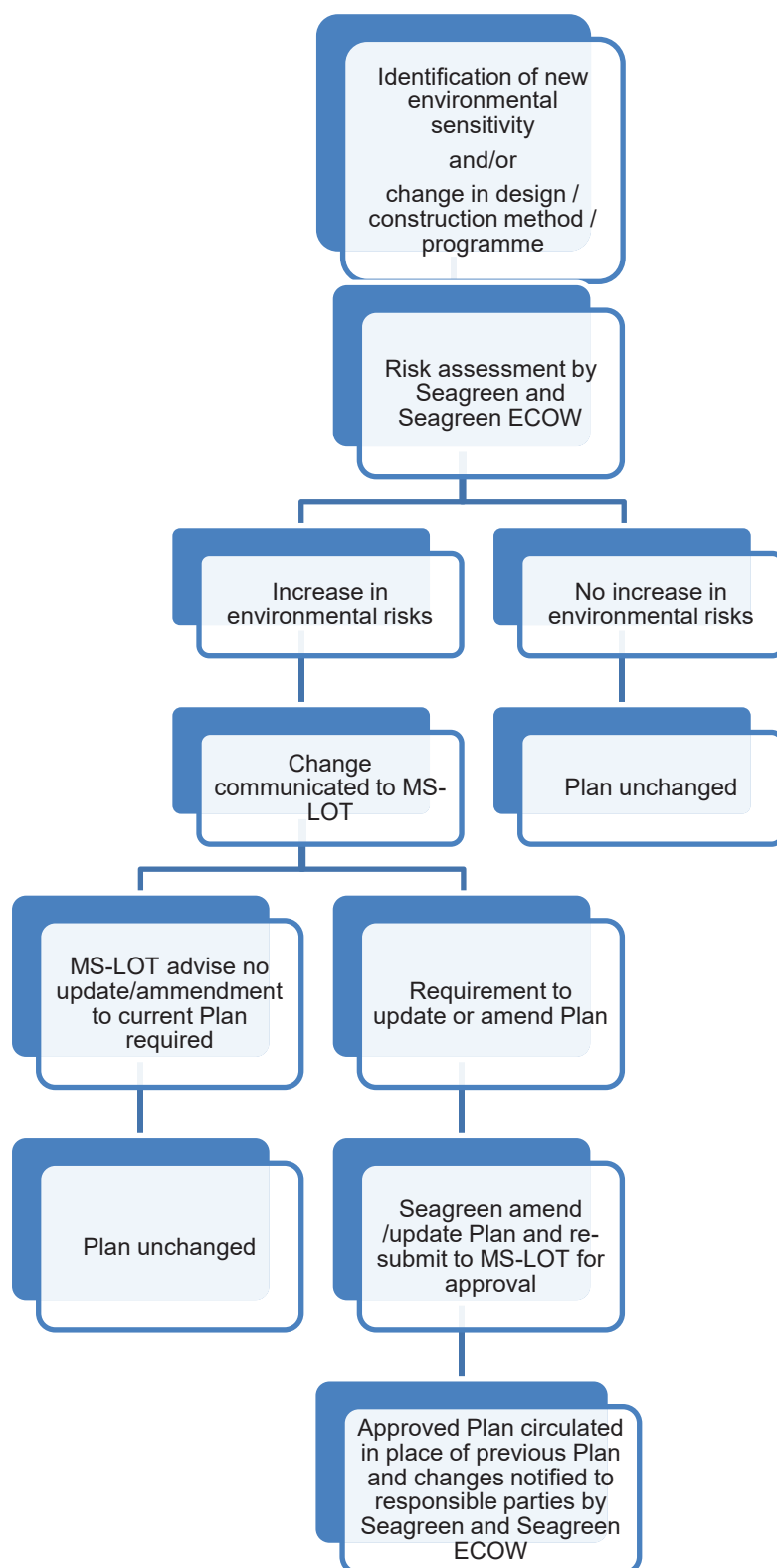
Term	Description
Aberdeenshire Council Archaeology Service (ACAS)	The Archaeological Curator for heritage matters within the intertidal zone of Offshore Export Cable Route will be the representative of the ACAS, which also provides archaeology planning services for Angus Council.
AEZ	Archaeological Exclusion Zone
Archaeological Curator	See HES and ACAS
OFFSHORE CEMP	Construction Environmental Management Plan as required under Alpha and Bravo Section 36 Condition 14 and the Offshore Transmission Asset Marine Licence Condition 3.2.1.2
CMS	Construction Method Statement as required under Alpha and Bravo Section 36 Condition 10 and the Offshore Transmission Asset Marine Licence Condition 3.2.2.4
(the) consents	Collective term used to describe the Section 36 consents and OTA Marine Licence issued to SAWEL, SBWEL and SWEL
Construction Environmental Advisor (CEA)	SWEL's Contractor is required to appoint a Construction Environmental Advisor. The Construction Environmental Advisor will be a full-time resource for the duration of the Contractor's construction works and will help to deliver the requirements of the SWEL consent conditions and wider environmental matters
Contractor	Means THE CONTRACTOR as defined by the CONDITIONS OF CONTRACT.
Designated Wreck	A designated wreck site is one afforded statutory protection under the Marine (Scotland) Act 2010 (previously Section 1 of the Protection of Wrecks Act 1973) on the basis that it is or may prove to be the site of a vessel of historical, archaeological or artistic importance, lying wrecked on or in the sea bed.
ECOW	Ecological Clerk of Works as required under Alpha and Bravo Section 36 Condition 29 and the Offshore Transmission Asset Marine Licence Condition 3.2.2.12.
EIA	Environmental Impact Assessment
ES	Environmental Statement
Generation Marine Licences	The two marine licences granted by the Scottish Ministers under reference (a) (in respect of the Seagreen Alpha Wind Farm) 04676/10/0 to SAWEL and (b) (in respect of the Seagreen Bravo Wind Farm) 04677/14/0 to SBWEL , which were both issued on 10 October 2014, as subsequently varied by varied marine licences granted by the Scottish Ministers under reference (a) (in respect of the Seagreen Alpha Wind Farm) 04676/18/0 to SAWEL and (b) in respect of the Seagreen Bravo Wind Farm) 046770/18/0 to SBWEL, which were both issued on 28 August 2018
HES	Historic Environment Scotland, the statutory body for archaeology and heritage within Scotland including marine archaeology from the mean high water mark to 200 nautical miles (nm) offshore. They are advisors to Marine Scotland Licensing and Operations Team (MS-LOT) on behalf of Scottish Ministers and for the purposes of this consent plan referred to as the Archaeological Curators for the offshore marine environment.

Term	Description
IAC	Inter-Array Cable. The electrical cables that connect the WTGs to the OTMs
Licensing Authority	Marine Scotland acting on behalf of the Scottish Ministers
Licensee	Seagreen Wind Energy Ltd (Seagreen), and having its registered office at Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ, on behalf of SAWEL and SBWEL
Marine Archaeology Reporting Protocol	Marine Archaeology Reporting Protocol, required under Condition 33 of the S36 consent, the equivalent to a Protocol for Archaeological Discoveries (PAD)
Marine Coordination	The management and surveillance of people, vessels and Offshore structures to ensure the safe preparation and execution of Offshore activities, in order to minimise the probability of an incident, and to provide effective response if an incident does occur
MCC	Marine Co-ordination Centre
MHWS	Mean High Water Springs
MS-LOT	Marine Scotland Licensing and Operations Team
O&M	Operation and Maintenance
OEMP	Operational Environmental Management Plan.
OnTW	Onshore Transmission Works, from landfall consisting of onshore buried export cables and new transmission substation
OSP	Offshore Substation Platforms
OTA	Offshore Transmission Asset includes the transmission cable required to connect the Wind Farm to the OnTW. This covers the OTMs and the cable route from the OTMs to the MHWS at the landfall at Carnoustie
OTA Marine Licence	Marine licence granted by the Scottish Ministers under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 in respect of the Seagreen Offshore Transmission Asset on 10 October 2014 as amended by the revised marine licence granted by the Scottish Ministers on 6th March 2019 (reference 04678/19/0)
OWF	Offshore Wind Farm Array
PEMP	OWFs Environmental Monitoring Programme as required under Alpha and Bravo S36 Condition 26 and the Offshore Transmission Assets Marine Licence Condition 3.2.1.1
PAD	Protocol for Archaeological Discoveries (equivalent to a MARP), which sets out the procedures that must be followed in the event of archaeological discoveries either on the seabed or on the deck of working vessels and identifies the personnel with responsibility for ensuring that the PAD is implemented.
Receptor	Archaeological or cultural heritage remains on the seabed
Receiver of Wreck	A centralised function, dealing with all reports of wrecks from around the UK including Northern Ireland. It is based within the Maritime and Coastguard Agency headquarters in Southampton, with assistance from Coastguard personnel around the coast.

Term	Description
Recorded Losses	Recorded Losses are records for ships or aircraft that are known to have wrecked or crashed offshore, but for which the exact locations are not known. The positional data of these records is unreliable and serves only to provide an indication of the types of vessels or aircraft that passed through the area and the wrecking incidents that are known to have occurred in the general region. Whilst the remains of these vessels and aircraft are expected to exist somewhere on the seafloor, their location is unknown.
ROV	Remotely-operated vehicle.
S36 Consents	consent under section 36 of the Electricity Act 1989 granted by the Scottish Ministers on 10 October 2014 in respect of the Seagreen Alpha and Seagreen Bravo offshore wind farms, both as varied by the Scottish Ministers by decision letter issued pursuant to an application under section 36C of the Electricity Act 1989 on 28 August 2018
SAWEL	Seagreen Alpha Wind Energy Ltd (SAWEL) (company number 07185533) and having its registered office at No.1 Forbury Place, 43 Forbury Road, Reading, United Kingdom, RG1 3JH
SBWEL	Seagreen Bravo Wind Energy Ltd (SBWEL) (company number 07818554 and having its registered office at No.1 Forbury Place, 43 Forbury Road, Reading, United Kingdom, RG1 3JH
Seagreen Archaeological Consultant	Specialist archaeologist appointed and retained by SAWEL/SBWEL and responsible for advising on all archaeological matters relating to the Seagreen Works that might impact on archaeological and cultural heritage resources
Site	The area outlined in red in Figure 1 attached to the S36 consent Annex 1 and the area outlined in red and the area outlined in black in the figure contained in Part 4 of the Marine Licence*
SSE	Scottish and Southern Energy
Study Areas	Alpha & Bravo site boundaries, the Offshore Export Cable Route, plus a 1 km buffer
Seagreen; or SWEL	Seagreen Wind Energy Limited, the parent company of Seagreen Alpha Wind Energy Ltd (SAWEL) and Seagreen Bravo Wind Energy Ltd (SBWEL), (company number 06873902) and having its registered office at No.1 Forbury Place, 43 Forbury Road, Reading, United Kingdom, RG1 3JH.
TEZ	Temporary exclusion zone
UKHO	United Kingdom Hydrographic Office
VMP	Vessel Management Plan, required under Condition 15 of the S36 consent and Condition 3.2.2.8 of the Marine Licence
WSI	Written Scheme of Investigation, which establishes the mitigation procedures that must be followed in order to avoid damage to cultural heritage receptors of archaeological potential for the entire scope of the Project. The WSI sets out the respective responsibilities of Seagreen, the Contractor, and the Seagreen Archaeological Consultant prior to and during installation, and creates formal lines of communication between the parties and relevant stakeholders.

Term	Description
WTG	Wind turbine generator

Appendix B – The Marine Archaeological WSI and PAD Change Management Procedure



Appendix C – Compliance with ES parameters and process

Effect	Worst case scenario as presented in 2012 ES	Potential Mitigation Measures recommended in 2012 ES	Reference to Section in this WSI/PAD
Construction			
Direct primary impacts on cultural heritage assets due to installation of infrastructure	Maximum 75 x WTG's with Conical GBS	<p>All sites of archaeological and cultural heritage interest included in this assessment will be avoided where possible. Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD) will be prepared for the approval of Historic Scotland and Aberdeenshire Council Heritage Advisor to mitigate construction effects in the event of any unexpected archaeological discoveries during installation.</p> <p>Infrastructure will be micro-sited and temporary exclusion zones will be implemented to prevent invasive activities.</p> <p>These measures will form part of the CEMP.</p>	Sections 3 and 4
	Meteorological masts: 3 x met mast foundations/ substructures		
	Array Cables: trenched (plough or jet) cable length: 355 km with a trench width of 3 m and max. depth of 2.1 m.		
	Array Cables: estimated total rock or mattress protection length: maximum 35.5 km, width 7 m and height 1 m.		
	Offshore Substation Platforms: Scenario 1 (1 x 1075MW HVDC converter & 2 x HVAC collector OSPs)		
	Anchoring / Jack up barges utilised by vessels / plant during construction		
Indirect impacts on cultural heritage assets due to physical processes and effects on sediment regimes	Seabed preparation works; cable burial by jetting ROV; and material deposition.	Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD) will be prepared for the approval of Historic Scotland and Aberdeenshire Council Heritage Advisor to mitigate construction effects in the event of any unexpected archaeological discoveries during installation.	Sections 3 and 4

Appendix D – Summary of mitigation measures

Source	ES Chapter	Reference	Details of commitment	Reference to Section in WSI/PAD
ES	Archaeology and Cultural Heritage (Chapter 17)	17.56, 17.64, 17.71, 17.79, 17.90, 17.98, 17.104, 17.109, 17.115, 17.121	In order to mitigate the risk of damage to any unrecorded archaeological remains, a Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD) will be prepared for the approval of Historic Scotland and Aberdeenshire Council Archaeological Service to mitigate construction effects in the event of any unexpected archaeological discoveries during installation	Section 3 and 4
ES	Archaeology and Cultural Heritage (Chapter 17)	17.56	Where cultural heritage assets may potentially be subject to direct effects, infrastructure will be micro-sited and temporary exclusion zones will be implemented to prevent invasive activities, such as WTG and array cable installation, and anchoring or deployment of jack-up legs. PA exclusion zones of at least 50m will be established around those of medium sensitivity HA14, HA25, HA43, HA47, HA64, HA77, HA106, HA112, HA132, HA225, HA230, HA248, HA268 and HA365.	Section 3.5
ES	Archaeology and Cultural Heritage (Chapter 17)	17.71	Where cultural heritage assets may potentially be subject to direct effects, infrastructure will be micro-sited and temporary exclusion zones will be implemented to prevent invasive activities, such as WTG and cable installation, and anchoring or deployment of jack-up legs. PB exclusion zones of at least 100m will be established around HA1001, HA1004 and HA1008. PB exclusion zones of at least 50m will be	Section 3.5

Source	ES Chapter	Reference	Details of commitment	Reference to Section in WSI/PAD
			established around those of medium sensitivity HA81, HA88, HA101, HA118, HA133, HA175, HA176, HA177 and HA409.	
ES	Archaeology and Cultural Heritage (Chapter 17)	17.90	<p>Where cultural heritage assets may potentially be subject to direct effects, infrastructure will be micro-sited/ re-routed and temporary exclusion zones will be implemented to prevent invasive activities, such as OSP and cable installation, and anchoring or deployment of jack -up legs.</p> <p>OTA exclusion zones of at least 100m will be established around those of high sensitivity HA10, HA12, HA18, HA19, HA28, HA35, HA47, HA60 and HA62. OTA exclusion zones of at least 50m will be established around those of medium sensitivity HA6, HA9, HA26, HA29, HA30, HA31, HA32, HA34, HA36-HA38, HA56, HA57, HA61, HA65, HA306, HA340 and HA345.</p>	Section 3.5
ER	Section 4	Table 4.1	An Archaeological Written Scheme of Investigation and Protocol for Archaeological Discoveries will likely form a consent requirement of any awarded Marine Licence for the alternative cable landfall methodology and will be adhered to throughout the works.	Section 3 and 4

Appendix E – AEZs within the Study Area

ID	Name	Description	Contains HA AEZ (from ES)	UTM30N Easting	UTM30N Northing	Consolidated AEZ ¹ (m)	Notes
WA 2000	Debris	Debris on seabed	29	569723	6277631	50	
WA 2001	HOCHE (wreck)	Wreck of Sailing Barque HOCHE and possible associated debris	30, 31, 32, 34, 35, 36, 37, 38, 57, 62, 65	524056	6262264	100	Contains multiple receptors, some listed as medium 50m AEZs, others as high 100m AEZs. Centred on HA35
WA 2002	Debris	Debris	56	524363	6262075	50	
WA 2003	Debris	Debris	61	528448	6264286	50	
WA 2004	Unknown metal wreck	Unknown metal wreck and possible associated debris	18, 19, 26, 28, 47, 60	530737	6265862	100	Contains multiple receptors, some listed as debris (medium) 50m AEZs, others as wrecks (high) 100m AEZs. Centred on mid-point between HA18 and HA19
WA 2005	Debris	Debris	6	538510	6269456	50	
WA 2006	Wreck	Wreck. 118 m long and 23 m wide on SSS data	12	551826	6273287	100	Wreck is 118m long on SSS imaging, probably part of UKHO record 3041 along with HA9 and HA10. Wreck. 118 m long and 23 m wide on SSS data
WA 2007	Metal wreck	Large metal wreck 150m in length	9, 10	551846	6273040	100	Wreck is probably part of UKHO record 3041 along with HA12. Wreck is large degraded iron wreck orientated S, 150m in length.

¹ In accordance with 2012 ES for WA IDs

ID	Name	Description	Contains HA AEZ (from ES)	UTM30N Easting	UTM30N Northing	Consolidated AEZ ¹ (m)	Notes
WA 2008	Wreck	INTACT, ON PORT SIDE, BOWS N, SCOUR AT BOW & STERN	CR97	553914.3	6270402	100	Wreck, not given AEZ in ES but at same position as UKHO 70435 and identified as wreck in SSS data assessment. INTACT, ON PORT SIDE, BOWS N, SCOUR AT BOW & STERN
WA 2009	Linear Debris	9.62m length, 3.90m width	306	556786	6274000	50	9.62m length, 3.90m width
WA 2010	Linear Debris	11.74m length, 3.92m width	340	558720	6273883	50	11.74m length, 3.92m width
WA 2011	Linear Debris	5.69m length, 2.08m width	345	558535	6273536	50	5.69m length, 2.08m width
WA 2012	Linear Debris	7.58m length, 3.16m	248	564456	6278244	50	7.58m length, 3.16m
WA 2013	Linear Debris	2.9m length, 1.35m width	25	565719	6281505	50	Close to magnetic anomaly which may be related. 2.9m length, 1.35m width
WA 2014	Irregularly shaped Debris	4.30m length, 0.47m width and a maximum height of 0.62m.	106	566229	6271993	50	4.30m length, 0.47m width and a maximum height of 0.62m.
WA 2015	Linear Debris Spread	9.04m length, 0.71m width	365	567112	6274882	50	9.04m length, 0.71m width
WA 2016	Partially Buried Debris	16.78m length, 1.19m width	43	567247	6280890	50	Within area of soft sediment. 16.78m length, 1.19m width
WA 2017	Debris Group	3.65m length, 0.85m width	14	567478	6282036	50	Located in area with boulders on seabed. 3.65m length, 0.85m width
WA 2018	Linear Debris	7.98m length, 5.12m width	225	568335	6279641	50	No magnetic anomaly in area. 7.98m length, 5.12m width
WA 2019	Debris on Seabed	4.54m length, 3.12m width	77	569723	6277631	50	4.54m length, 3.12m width

ID	Name	Description	Contains HA AEZ (from ES)	UTM30N Easting	UTM30N Northing	Consolidated AEZ ¹ (m)	Notes
WA 2020	Debris	7.26m length, 1.10m width	47	569961	6281211	50	Quite fragmented on seabed. 7.26m length, 1.10m width
WA 2021	Wreck	DEGRADED, COLLAPSED TOWARDS MIDSHIPS & AT STERN, BOWS E	UKHO 3161	572134	6264202	100	Not located on 2010/2011 geophysics but UKHO record 3161 has it located through mag and multibeam at this location. Length 69.1m, width 18.3m, orientation East
WA 2022	Buried debris	10.05m length, 1.80m width	132	573786.4	6270058	50	10.05m length, 1.80m width
WA 2023	Possible debris	7.58m length, 0.70m width	133	575864.5	6270475	50	No associated magnetic anomalies. 7.58m length, 0.70m width
WA 2024	Wreck	Possible sailing fife or similar medium sized C19th/20th wooden fishing vessel	409	577240	6264891	100	Possible sailing fife or similar medium sized C19th/20th wooden fishing vessel. UKHO-WO-70465 (HA 1004) is located within 7m of this wreck first identified by multibeam data.
WA 2025	Debris	6.86m length, 0.26m width	118	579224	6272921	50	6.86m length, 0.26m width
WA 2026	Depression/ buried object		64	580680	6280616	50	Associated with HA 1003
WA 2027	Linear Debris	7.09m length, 2.74m width	230	583236	6282260	50	No associated magnetic anomalies. 7.09m length, 2.74m width
WA 2028	Debris	6.17m length, 2.05m width	268	583479	6281600	50	6.17m length, 2.05m width
WA 2029	Debris	8.08m length, 0.26m width	101	585929	6276473	50	8.08m length, 0.26m width
WA 2030	Curvilinear feature	18.96m length, 1.09m width	81	587742	6280533	50	18.96m length, 1.09m width
WA 2031	HMS ST BRIAC (wreck)	UPRIGHT, IN TWO SECTIONS, MINOR SCOUR. Former iron	175, 176, 177	588437	6268346	100	UPRIGHT, IN TWO SECTIONS, MINOR SCOUR. Former iron ship used as target ship for FAA. Centred on HA176, HA175 approx. 100m to NW, HA177 approx. 100m to SSW

ID	Name	Description	Contains HA AEZ (from ES)	UTM30N Easting	UTM30N Northing	Consolidated AEZ ¹ (m)	Notes
		ship used as target ship for FAA.					
WA 2032	Aircraft	Possible metal aircraft remains, broken up.	88	589108	6277960	100	Possible metal aircraft remains, broken up. Located on SSS data with small magnetic signature. Partially buried.
Additional receptors identified during survey works							
CA 001	Debris	1.50m length, 0.75m width	-	577735	6281071	10	Y-shape debris comprising wooden base and two metal arms
CA 003	Buried debris	1.50m length, 1.00m width	-	585267	6275032	10	Possible Admiralty-type anchor
CA 004	Partially buried debris	0.75m length, 1.00m width	-	579657	6269909	10	Possible Admiralty-type anchor
CA 005	Partially buried debris	1.20m length, 0.15m width	-	579654	6269838	Three receptors form triangular debris field 10m buffer applied around field	Ferrous tube. Possible pipe, breach-loading gun or cannon
CA 006	Buried debris	1.80m length, 0.10m width	-	579640	6269844		Section of wood, possibly related to a wreck
CA 007	Buried debris	3.50m length, 2.00m width	-	579659	6269856		Section of wood, possibly related to a wreck
CA 009	Partially buried debris	4.00m length, 3.5m width	-	588417	6272094	15	Wreckage, possibly a steam boiler. Potential larger extent below seabed

Appendix F – Geophysical anomalies of High and Medium Archaeological Potential within the Study Areas (adapted from Headland Archaeology 2012)

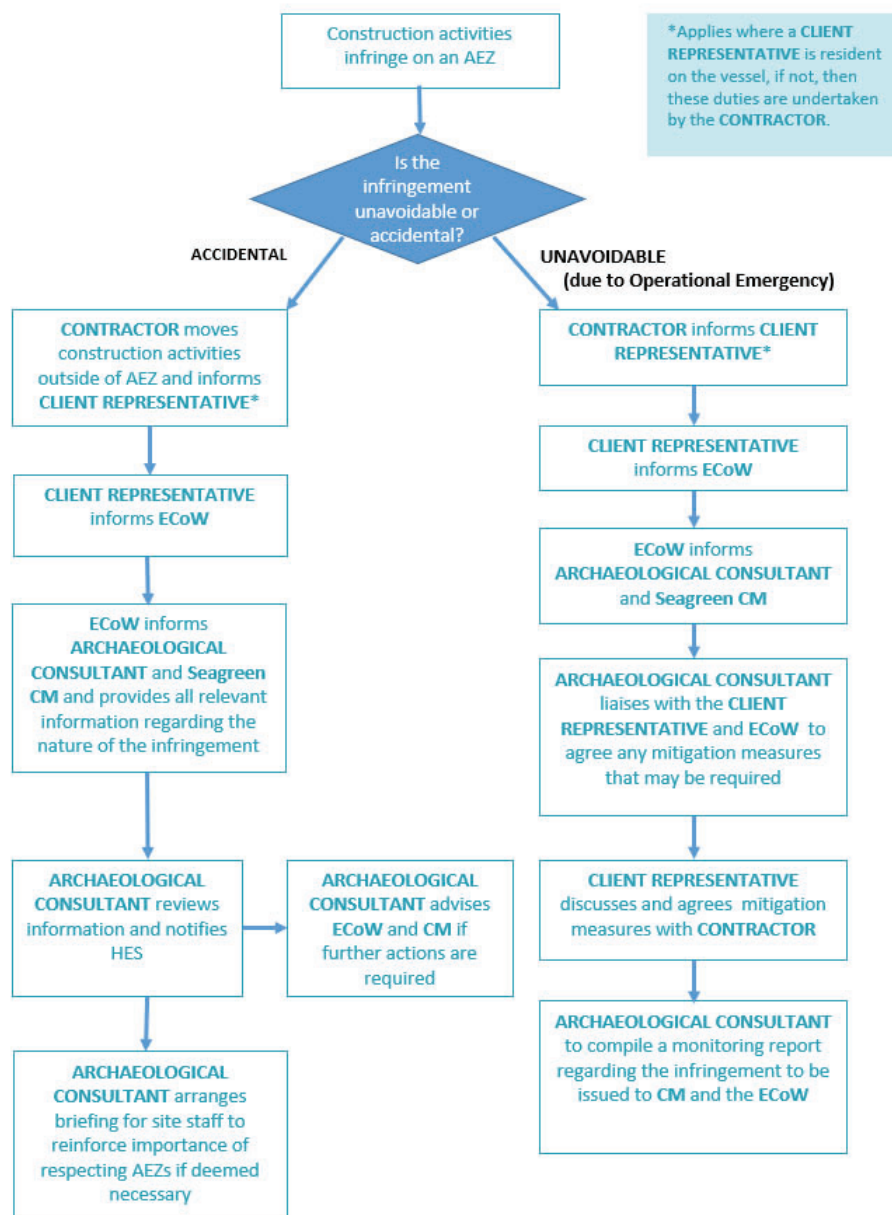
HA_ID	Description	Type	Potential	Length	Width	Height	Easting	Northing
Magnetic Anomalies								
35	Wreck anomaly	Mag	High	0	0	0	588435.69	6268326.4
36	Wreck anomaly	Mag	High	0	0	0	577247.3	6264877.4
Sidescan Sonar Anomalies								
6	Debris	SSS	Medium	13.14	11.25	1	538510.2	6269456.1
9	Wreck?	SSS	Medium	53.51	21.4	0.03	551769.77	6273083.1
10	Wreck	SSS	High	81.15	24.61	2.6	551845.58	6273040.1
12	Wreck	SSS	High	118.64	27.29	1	551826.17	6273287.3
14	Group possible debris	SSS	Medium	3.65	0.85	2.57	567477.73	6282035.7
18	Wreck	SSS	High	14.9	7.73	0.3	530669.2	6265811.4
19	Debris	SSS	High	21.03	8.79	0.07	530805.7	6265914.5
25	Debris	SSS	Medium	2.9	1.35	1.1	565718.98	6281505
26	Debris	SSS	Medium	19.54	14.74	1.2	530682.63	6265932
28	Wreck	SSS	High	20.38	5.85	0.03	530747.42	6265806
29	Debris	SSS	Medium	9.79	2.22	0.08	524017.46	6262695.2
30	Debris	SSS	Medium	36.05	2.37	0.9	524017.93	6262306.1
31	Debris	SSS	Medium	2.85	0.72	2.3	524010.79	6262232.6
32	Debris	SSS	Medium	16.47	0.91	0.15	524068.68	6262282.9
34	Debris	SSS	Medium	13.67	2.34	0.35	524104.61	6262314.8
35	Debris	SSS	Medium	33.4	9.11	4.19	524056.05	6262263.5
36	Debris	SSS	Medium	35.47	3.19	2.39	523983.19	6262262.3
37	Debris	SSS	Medium	5.71	2.76	0.97	523993.65	6262292
38	Debris	SSS	Medium	12.89	2.67	0.04	524032.2	6262305.3
43	Buried Debris	SSS	Medium	16.78	1.18	0.37	567246.73	6280890.2

HA_ID	Description	Type	Potential	Length	Width	Height	Easting	Northing
47	Wreck	SSS	High	14.45	7.76	0.02	530758.55	6265890.9
47	Possible debris	SSS	Medium	7.26	1.1	0.52	569961.47	6281210.5
56	Debris	SSS	Medium	55.61	0.87	0	524363.24	6262074.8
57	Debris	SSS	Medium	41.51	2.03	0.63	523998.22	6262258.1
60	Wreck	SSS	High	14.75	3.53	1.71	530759.19	6265889.6
61	Debris	SSS	Medium	79.2	1.49	0.24	528447.65	6264285.9
62	Debris	SSS	High	19.83	5.07	5.63	524042.78	6262277.9
64	Depression/ buried debris	SSS	Medium	13	9.44	0	580679.98	6280616.5
65	Debris	SSS	Medium	30.55	5.19	0.33	524025.09	6262247
75	Linear debris	SSS	Medium	14.6	0.88	0.6	557021.19	6274886.1
77	Debris on seabed	SSS	Medium	4.54	3.12	0.05	569722.63	6277630.9
78	Linear debris	SSS	Medium	23.03	0.75	0.15	556882.73	6274881.8
81	Curvilinear feature	SSS	Medium	18.96	1.09	0.56	587741.81	6280532.5
88	Possible aircraft	SSS	High	15.29	8.14	0.56	589107.53	6277960.2
97	Wreck	SSS	High	36.84	5.33	0.41	553914.28	6270402.4
101	Debris	SSS	Medium	8.08	0.46	0.05	585928.96	6276472.9
106	Debris	SSS	Medium	4.3	0.47	0.62	566228.85	6271992.9
112	Possible Anchor	SSS	Medium	2.86	10.1	0.04	565864.76	6271195.9
118	Debris	SSS	Medium	6.86	0.26	0.67	579224.22	6272921.1
132	Debris	SSS	Medium	10.05	1.8	0.45	573786.36	6270058.4
133	Debris	SSS	Medium	7.58	0.7	0.23	575864.53	6270475.3
175	Wreck	SSS	High	36	4.33	0.71	588375.5	6268388.1
176	Wreck	SSS	High	77.63	18.59	0.63	588437.29	6268346.2
177	Wreck debris	SSS	High	18.47	13.43	0.55	588437.29	6268287
225	Linear debris	SSS	Medium	7.98	5.12	0.79	568335.4	6279640.8
230	Debris	SSS	Medium	7.09	2.74	1.12	583235.78	6282260.3

HA_ID	Description	Type	Potential	Length	Width	Height	Easting	Northing
248	Linear debris	SSS	Medium	7.58	3.16	1.26	564456.01	6278244
268	Debris	SSS	Medium	6.17	2.05	1.21	583478.73	6281600.4
306	Linear debris	SSS	Medium	9.62	3.9	1.26	556785.56	6273999.6
345	Linear debris	SSS	Medium	5.69	2.08	0.91	558534.54	6273536.4
365	Linear debris	SSS	Medium	9.04	0.71	1.3	567111.5	6274881.7
409	Wreck	SSS	High	30	7.32	1.8	577240	6264891
UKHO 3161	Wreck	UKHO	High	69	18	9.2	572134	6264202

Appendix G – Seagreen Protocol for Infringement of Archaeological Exclusion Zone

Protocol for Infringement of Archaeological Exclusion Zone



Acronyms:

- Client: Seagreen Wind Energy Limited (Seagreen)
- CM – Compliance Manager
- ECoW: Environmental Clerk of Works
- HES: Historic Environment Scotland, the statutory body for archaeology and cultural heritage in Scotland
- AEZ: Archaeological Exclusion Zone

Appendix H - Preliminary Record Form

Protocol for Archaeological Discoveries: Offshore Renewables Projects

Preliminary Record Form Page 1 of 2

Preliminary Record Form: Discoveries on the Seabed/ on board / in the inter-tidal zone / on land

Company Name:
Vessel/Team Name:
Site/sea area Name:
Date:
Time of compiling information:
Name of compiler (Site Champion):
Name of finder (if different to above):

Time at which discovery was encountered:
Vessel position at time when anomaly was encountered:
a) Latitude
b) Longitude
c) Datum (if different from WGS84)
Original position of the anomaly on the seabed, if known:
Notes on likely accuracy of original position stated above:
a) How accurate is the position?
b) Is the position the original position or has the material been moved by operations?
c) Details of circumstances and activity that lead to the discovery

Protocol for Archaeological Discoveries: Offshore Renewables Projects

Preliminary Record Form Page 2 of 2

Preliminary Record Form: Discoveries on the Seabed/ on board / in the inter-tidal zone / on land

Description of the find/anomaly:

Apparent size/extent of the anomaly:

Details of any find(s) recovered:

Details of photographs, drawings or other records made of the find(s) (e.g. location figure):

Details of treatment or storage of find(s):

Date and time Nominated Contact informed:

General notes:

If discovered on the seabed:

a) Derived from: e.g. Obstacle Avoidance Sonar, Cable Tensiometer?

b) Apparent size/extent of anomaly (length, width, height above seabed)

c) Extent of deviation/route development

Signed:

Date:

Appendix I – Types of Finds and Management

General

All artefacts identified from material recovered will be retained, processed and recorded in accordance with the ClfA's Standard and Guidance for Archaeological Field Evaluations (ClfA, 2014a) and Standard and guidance for the collection, documentation, conservation and research of archaeological material (ClfA, 2014b). Any finds requiring conservation or specific storage conditions will be dealt with immediately in line with First Aid for Finds (Watkinson and Neal 1998) and First Aid for Underwater Finds (Robinson 1998). A full record will be made of any treatment given.

Finds and other items of archaeological interest recovered offshore in the course of investigation are the property of The Crown Estate Scotland as the landowner, with the exception of any human remains, and 'wreck' for the purposes of the *Merchant Shipping Act* 1995, or material covered by the *Protection of Military Remains Act* 1986.

If the Receiver of Wreck has not found ownership within one year, any finds left in storage with Seagreen Archaeological Consultant t, that are not requested by the Developer or The Crown Estate Scotland, will revert to the ownership of the Seagreen Archaeological Consultant for the purposes of storage, transfer to appropriate repository, or discard.

Ordnance

If items of ordnance are discovered, they will be treated with extreme care. Company Health & Safety policies and established operational procedures should always take priority over archaeological reporting of munitions and ordnance.

Depending on the item's age, ordnance may be of archaeological interest, and therefore if it is safe to do so, it should be recorded and reported.

Any firearms and ammunition are likely to be subject to the Firearms Acts (various dates). Ammunition should be regarded as ordnance, regardless of its size.

Human remains

In the event of discovery of any human remains (articulated or disarticulated, cremated or unburnt), all excavation of the deposit(s) will cease pending the Seagreen Archaeological Consultant obtaining a Ministry of Justice Licence (this includes cases where remains are to be left *in situ*).

The final deposition of human remains subsequent to the appropriate level of osteological analysis and other specialist sampling/examinations will follow the requirements set out in the Ministry of Justice licence.

Treasure

The Seagreen Archaeological Consultant will immediately notify the Developer and the Archaeological Curators on discovery of any material covered, or potentially covered by the *Treasure Trove in Scotland: A Code of Practice* 2008 (updated in 2016).). In Scotland, any ownerless objects found by chance or through activities such as metal-detecting, field-walking, or archaeological excavation become the property of the Crown and therefore may be claimed as treasure trove.

Aircraft

The majority of aircraft wrecks are military and therefore fall under the *Protection of Military Remains Act* 1986. All military aircraft crash sites in the UK and its territorial waters, are controlled sites under this Act. It is an offence under this Act to tamper with, damage, move or unearth any items at such sites, unless the Ministry of Defence (MoD) has issued a licence authorising such activity. Consequently, anyone wishing to recover a military aircraft or excavate a military aircraft crash site in the UK is required to obtain a licence from the Secretary of State

Any finds that are suspected of being military aircraft will be reported immediately to the Seagreen Archaeological Consultant. In the case of a military aircraft being investigated under licence, any human remains will be reported immediately.

Wreck

Archaeological artefacts that have come from a ship are 'wreck' for the purposes of the *Merchant Shipping Act* 1995. The Developer, via the Seagreen Archaeological Consultant, should ensure that the Receiver of Wreck is notified within 28 days of recovery, for all items of wreck that have been recovered.

Environmental

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

Approaches and methods will be consistent with *Environmental Archaeology: a guide to the theory and practice of methods*, from sampling and recovery to post-excavation (English Heritage, 2011) and *Geoarchaeology: using earth sciences to understand the archaeological record* (Historic England, 2015b).

Conservation and storage

All recovered materials, from land or underwater, will be subject to a Conservation Assessment to gauge whether special measures are required while the material is being held. This Conservation Assessment will be carried out by the Seagreen Archaeological Consultant with an appropriate level of expertise, with advice from appropriate specialists. The Seagreen Archaeological Consultant with appropriate expertise will implement recommendations arising from the assessment. If no special measures are recommended, finds will be conserved, bagged, boxed and stored in accordance with industry guidelines (CIfA 2014b) and the Museums and Galleries Commissions Standards in the Museum Care of Archaeological Collections (1992).

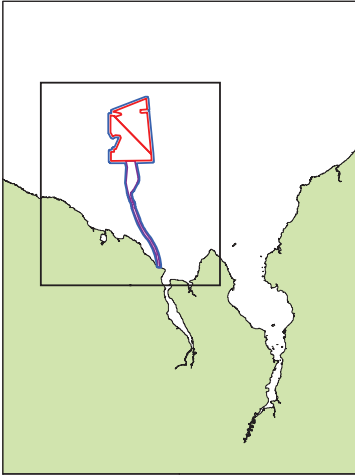
Figures

Figure 1 Site Location

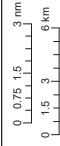
Figure 2a-c Archaeological Exclusion Zones

Figure 3 AEZs in proximity to Wrecks 2001 and 2004

Figure 4 AEZs in proximity to Wrecks 2006, 2007 and 2031



- Archaeological Study Area
(including 1 km buffer)
- Offshore Wind Farm Site
- Boundary
- Offshore Export Cable Boundary



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

SITE LOCATION

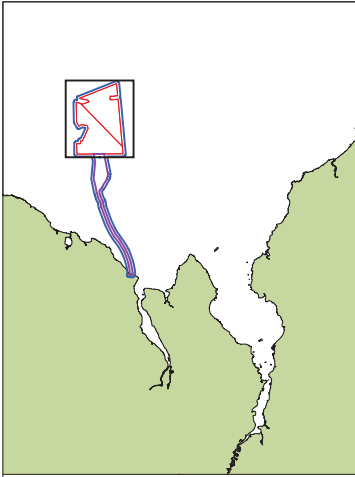
Rev	Date	Details	Status	Drawn	Reqt	Chkd	Appd
R1	07/08/2019	First Issue	-	-	-	-	-
R2	-	-	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

Figure 1

Scale	Print Size	Datum	Projection
1:300,000	A3	WGS84	UTM30N





Legend

- Offshore Wind Farm Site Boundary
- Offshore Export Cable Boundary
- Archaeological Study Area (Including 1 km Buffer)
- AEZ buffers established around additional receptors identified during survey works
- Consolidated AEZ buffers (in accordance with 2012 ES) (WA prefixes)



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

Archaeological Exclusion Zones A

Rev	Date	Details	Status	Drawn	Repl	Check	Appd
R1	14/08/19	First Issue	-	-	-	-	-
R2	03/09/19	-	-	-	-	-	-
R3	12/11/21	-	-	CT	EM	-	-
R4	-	-	-	-	-	-	-

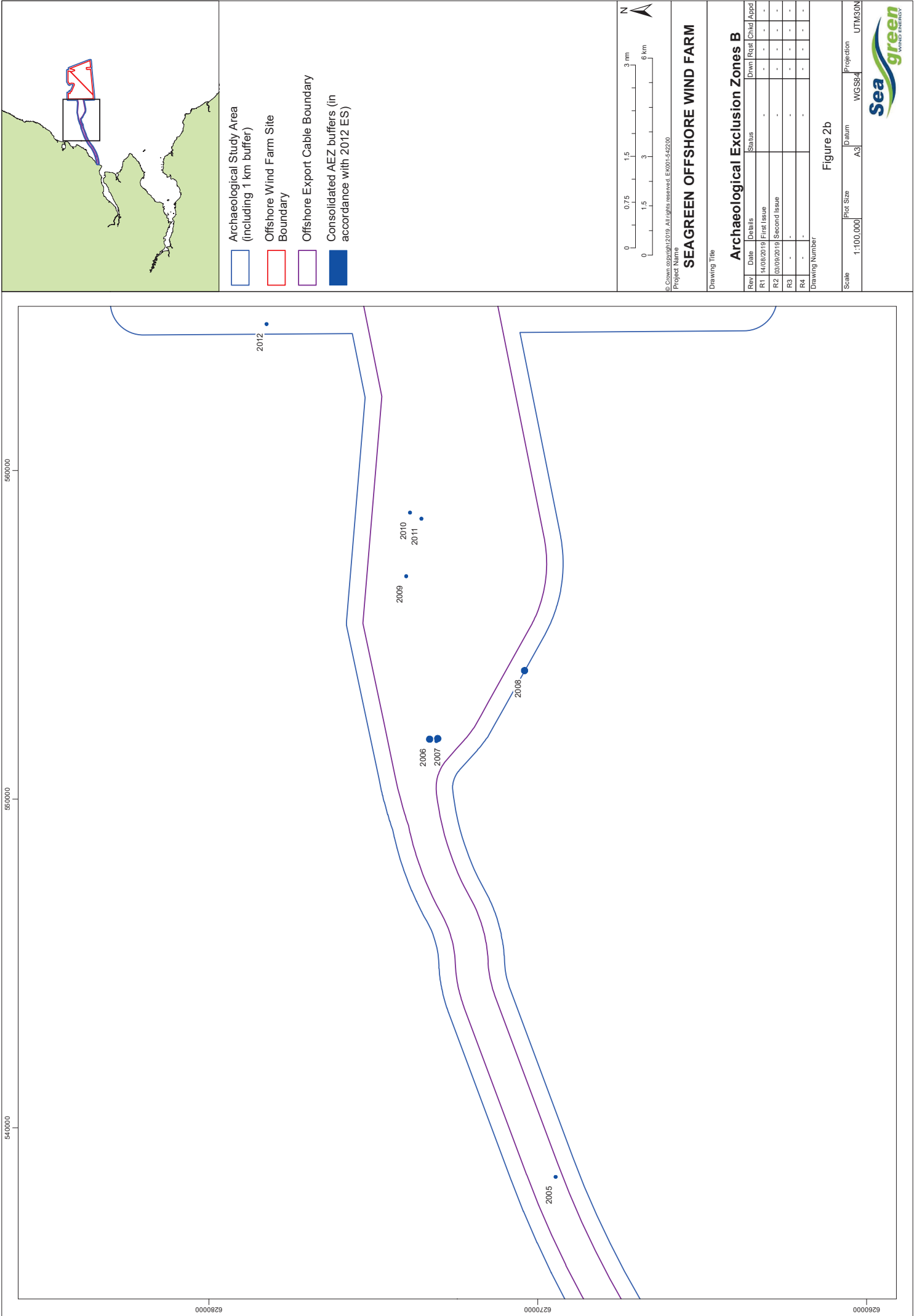
Drawing Number

Figure 2a

Scale	Plot Size	Datum	Projection
1:100,000	A3	WGS84	UTM30N

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Archaeological Exclusion Zones B

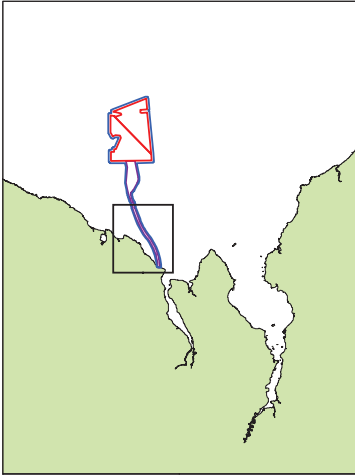
Rev	Date	Details	Status	Drawn	Reqd	Chkd	Appd
R1	14/08/2019	First Issue	-	-	-	-	-
R2	03/09/2019	Second Issue	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

Figure 2b

Scale	Plot Size	Datum	Projection
1:100,000	A3	WGS84	UTM30N





- Archaeological Study Area (including 1 km buffer)
- Offshore Wind Farm Site Boundary
- Offshore Export Cable Boundary
- Consolidated AEZ buffers (in accordance with 2012 ES)



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Project Name

SEAGREEN OFFSHORE WIND FARM

Drawing Title

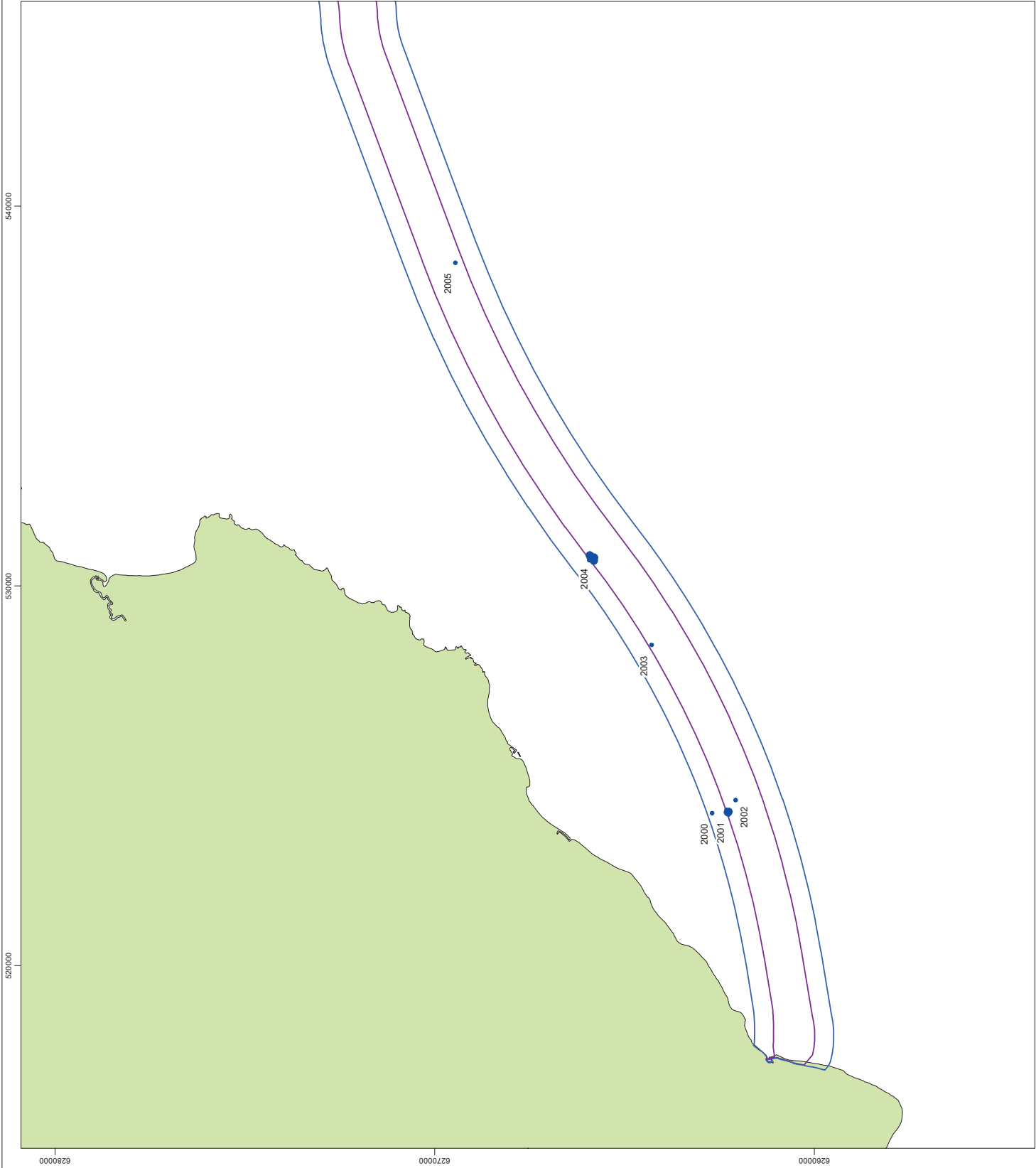
Archaeological Exclusion Zones C

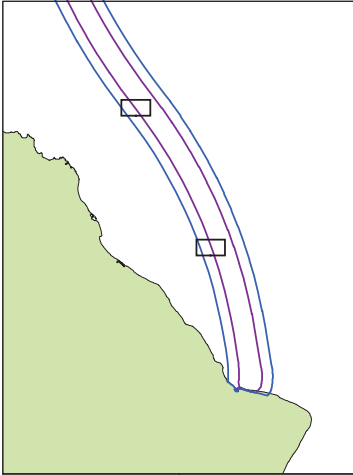
Rev	Date	Details	Status	Drawn	Revised	Checked	Approved
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R2	03/09/2019	Second Issue	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

Figure 2c

Scale	Print Size	Datum	Projection
1:100,000	A3	WGS84	UTM30N





- Archaeological Study Area
(including 1 km buffer)
- Offshore Export Cable Boundary
- Consolidated AEZ buffers (in
accordance with 2012 ES)
- Geophysical anomalies within the
Archaeological Study Area
(adapted from Headland
Archaeology 2012)
- Magnetometer targets
- Sidescan Sonar targets



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Project Name

SEAGREEN OFFSHORE WIND FARM

**Archaeological Exclusion Zones
Close up of wrecks 2001 and 2004**

Rev	Date	Details	Status	Drawn	Repl	Checked	Appd
R1	14/08/2019	First Issue	-	-	-	-	-
R2	03/09/2019	Second Issue	-	-	-	-	-
R3	-	-	-	-	-	-	-
R4	-	-	-	-	-	-	-

Drawing Number

Figure 3

Scale

1:5,000

Plot Size

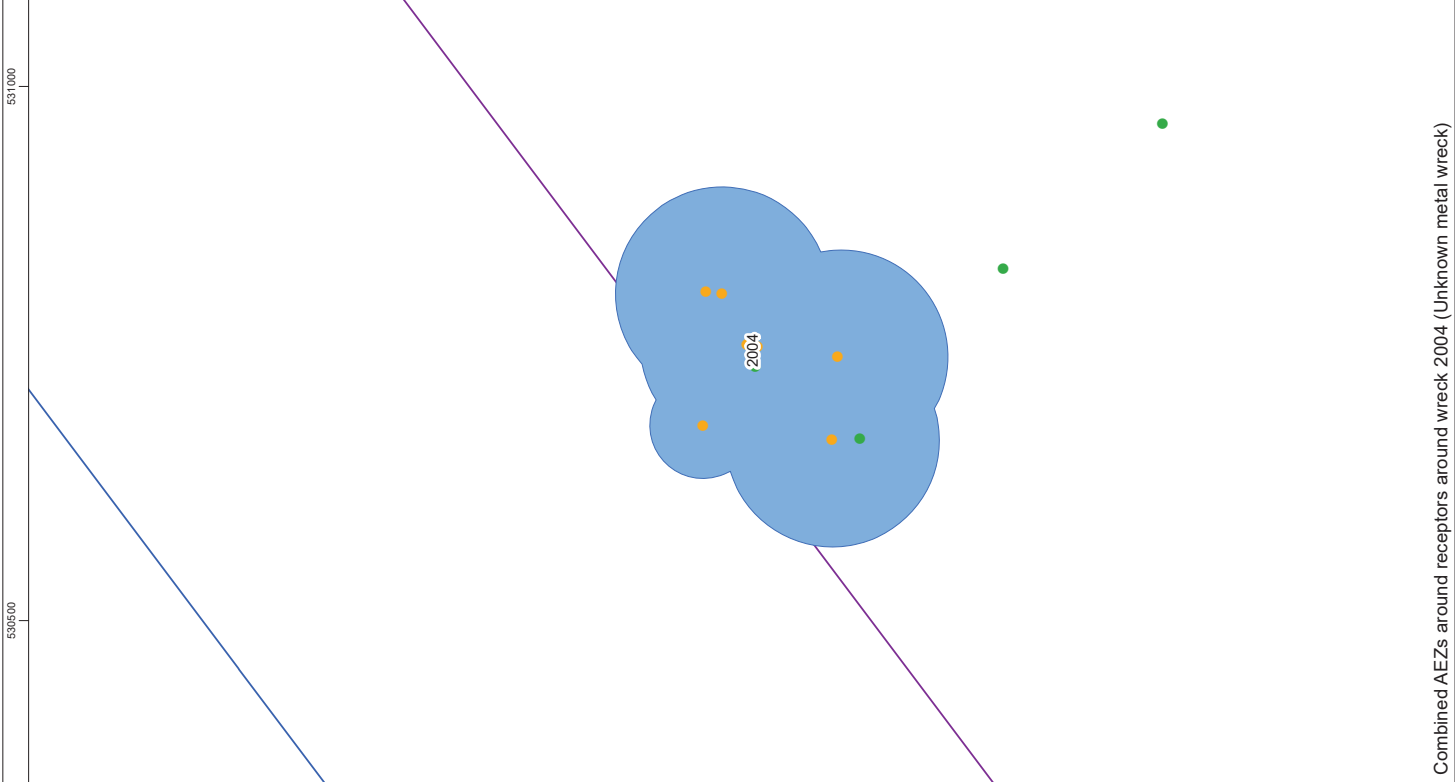
A3

Datum

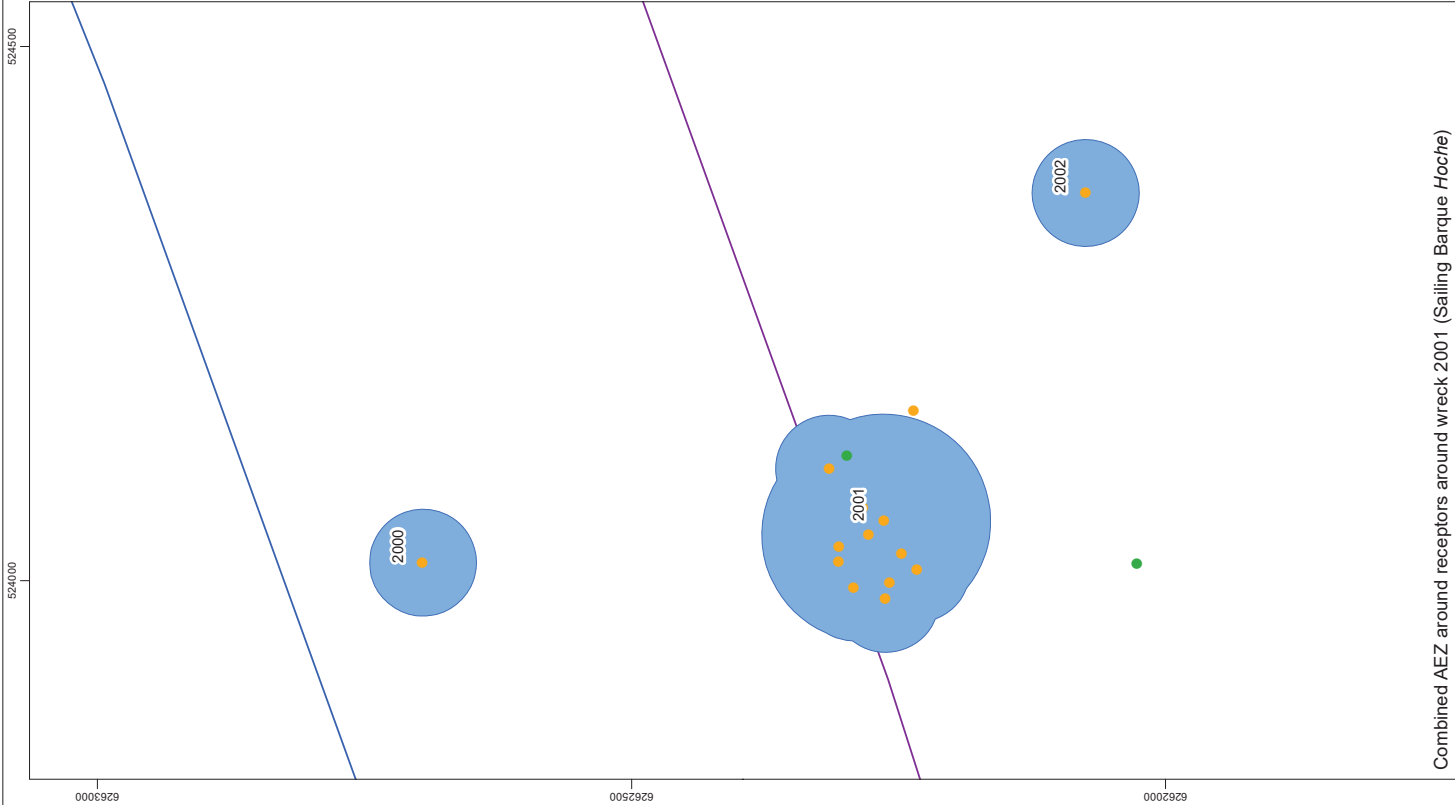
WG84

Projection

UTM30N



Combined AEZs around receptors around wreck 2004 (Unknown metal wreck)



Combined AEZ around receptors around wreck 2001 (Sailing Barque *Hoché*)

