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Inch Cape Offshore Wind Farm Boulder Clearance and UXO Identification Marine Licence Application Supporting Environmental Information Report (SEI)

Inch Cape Acceptance

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Table of Contents

Table of Contents	3
Table of Figures	6
Table of Tables	6
Acronyms & Abbreviations	7
Glossary	9
Executive Summary	11
1 Introduction	13
1.1 Background	13
1.2 Intention to Apply for a New Marine Licence	15
1.3 Scope of this Document	15
2 Description of the Boulder Clearance and UXO Identification Activities	16
2.1 Outline Programme	16
2.2 Outline Method Statement	16
2.2.1 Boulder Clearance and Relocation	16
2.2.2 UXO Identification	16
2.2.3 Vessels	17
2.3 Licensable Marine Activities	18
3 Scope of Assessment	19
3.1 Embedded Mitigation	21
3.2 Evaluation of potential impacts	21
4 Environmental Appraisal	25
4.1 Benthic Ecology	25



4.1.1	Baseline	25
4.1.2	Existing ES / EIAR conclusions	27
4.1.3	Effect of the Boulder Clearance and UXO Identification Activities	27
4.1.4	Conclusion	28
4.2	Natural Fish and Shellfish	29
4.2.1	Baseline	29
4.2.2	Existing ES / EIAR conclusions	29
4.2.3	Effect of the Boulder Clearance and UXO Identification Activities	29
4.2.4	Conclusion	30
4.3	Marine Mammals	31
4.3.1	Baseline	31
4.3.2	Existing Assessment	31
4.3.3	Effect of the Boulder Clearance and UXO Identification Activities	31
4.3.4	Conclusion	33
4.4	Ornithology	34
4.4.1	Baseline	34
4.4.2	Existing Assessment	34
4.4.3	Effect of the Boulder Clearance and UXO Identification Activities	34
4.4.4	Conclusion	35
4.5	Cultural Heritage and Marine Archaeology	36
4.5.1	Baseline	36
4.5.2	Existing Assessment	36
4.5.3	Effect of the Boulder Clearance and UXO Identification Activities	36
	Direct Physical Impacts	36
4.5.4	Conclusion	37
4.6	Commercial Fisheries	38
4.6.1	Baseline	38
4.6.2	Existing Assessment	38

4.6.3	Effect of the Boulder Clearance and UXO Identification Activities	38
4.6.4	Conclusion	39
4.7	Shipping and Navigation	40
4.7.1	Baseline	40
4.7.2	Existing Assessment	40
4.7.3	Effect of the Boulder Clearance and UXO Identification Activities	40
4.7.4	Conclusion	40
4.8	Cumulative Considerations	41
5	Summary and Conclusion	42
6	References	43

Table of Figures

Figure 1.1: Survey Works Area in relation to the Inch Cape Offshore Wind Farm Development Area and Current Offshore Export Cable Corridor	14
Figure 3.1: Location of the Boulder Clearance and UXO Identification Activities and Surrounding Designated Sites	20

Table of Tables

Table 3.1: Summary of Potential impacts Relating to the Boulder Clearance and UXO Identification Activities (grey – receptor does not require any further information, black text – further information provided in Section 4)	22
Table 4.1: Biotopes Recorded at the Development Area and the Offshore Export Cable Corridor of the Inch Cape Offshore Wind Farm	25

Acronyms & Abbreviations

Acronym	Term
AEZ	Archaeological Exclusion Zone
ALARP	As Low As Reasonably Practicable
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPS-RA	European Protected Species Risk Assessment
ES	Environmental Statement
FLO	Fisheries Liaison Officer
HRA	Habitats Regulations Appraisal
ICOL	Inch Cape Offshore Limited
INNS	Invasive non-native species
MarLIN	Marine Life Information Network
MBES	Multi Beam Echo Sounder
MD-LOT	Marine Directorate – Licensing Operations Team
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MTL	Master target list
NtM	Notice to Mariners

OFTI	Offshore Transmission Infrastructure
OftTW	Offshore Transmission Works
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
RIAA	Report to Inform Appropriate Assessment
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SMT-ROV	Subsea Multi-Tool Remotely Operated Vehicle
SPA	Special Protection Area
SSC	Suspended Sediment Concentrations
SSSI	Site of Special Scientific Interest
USBL	Ultra-Short Baseline
UTM30N	Universal Transverse Mercator Zone 30 Northern Hemisphere
UTROV	Utility Remotely Operated Vehicle
UXO	Unexploded Ordnance
WROV	Work-Class Remotely Operated Vehicle
WSI	Written Scheme of Investigation

Glossary

Defined Term		Meaning
The 2010 Act		Marine (Scotland) Act 2010.
The 2013 Application		The Environmental Statement, HRA Report and supporting documents submitted by the Company on 1 st July 2013 to construct and operate an offshore generating station and transmission works.
The 2018 Application		The EIA Report, HRA Report and supporting documents submitted by the Company on 15 August 2018 to construct and operate an offshore generating station and transmission works.
Development		The Inch Cape Offshore Wind Farm (the Wind Farm) and Offshore Transmission Works (OTW) being developed by Inch Cape Offshore Limited (ICOL).
Development Area		The area for the Wind Farm, within which all Wind Turbine Generators, inter-array cables, interconnector cables, offshore substation platform(s) and the initial part of the Offshore Export Cable and any other associated works must be sited. As stipulated in the Crown Estate agreement for lease.
Inch Cape Offshore Transmission		Components of the Development which are permitted by the OfTI Marine Licence (MS-00010593).
Inch Cape Offshore Wind		A component of the Development, comprising wind turbines and their foundations and substructures, and inter-array cables.
Offshore Export Cables		The subsea, buried or protected electricity cables running from the offshore wind farm substation to the landfall and transmitting the electricity generated to the onshore cables for transmission onwards to the onshore substation and the electrical grid connection.

Defined Term	Meaning
Offshore Export Cable Corridor/ Export Cable Corridor	The area within which the Offshore Export Cables will be laid from the OSP and up to Mean High Water Springs.
Offshore Transmission Works (OfTW)	The Offshore Export Cable and OSPs. This includes all permanent and temporary works required.
The Wind Farm	The Inch Cape Offshore Wind Farm.

Executive Summary

Inch Cape Offshore Limited (ICOL) is applying for a variation to the marine licence MS-00010984, granted under Part 4 of the Marine (Scotland) Act 2010 ("the 2010 Act"). The marine licence is required for boulder clearance and Unexploded Ordnance (UXO) identification along the Offshore export Cable Corridor (ECC) and the Development Area for the Inch Cape Offshore Wind Farm (OWF).

As part of the pre-construction works, a number of activities are required in order for construction to proceed. These include boulder clearance and UXO identification. UXO clearance will be covered by a separate marine licence application.

Boulder clearance and UXO identification activities are minimally invasive, however are licensable due to the requirements to move boulders and agitate the sediment on the seabed.

The works will be localised, small scale and of short duration, taking place within the existing consented Project area i.e., the Development Area and the Export Cable Corridor (ECC) and it can be concluded the boulder clearance and UXO identification activities will not result in significant effects on a range of environmental receptors.

In October 2024, a Marine Licence (MS-00010879) was granted for boulder clearance and UXO identification during early construction of the Inch Cape Offshore Wind Farm. This licence was later varied in November 2024 (MS-00010984).

ICOL is seeking to extend the current boulder clearance and UXO identification Marine Licence MS-00010984) to the end of the construction period (Q4 2027) to enable UXO clearance operations throughout the entire construction period.

This document has been prepared by competent experts (The Natural Power Consultants) to provide the supporting information to inform the marine licence application to account for the extension in the programme of works.

1 Introduction

1.1 Background

The Inch Cape Offshore Wind Farm (the Wind Farm) and Offshore Transmission Infrastructure (OfTI), hereafter referred to as the Development, is being developed by Inch Cape Offshore Limited (ICOL) (Figure 1.1).

In 2014, the Scottish Ministers granted ICOL Section 36 and marine licence consents, pursuant to the 2013 Application, for the construction and operation of an offshore wind farm and a marine licence for the construction and operation of offshore transmission infrastructure. The licences granted to ICOL in 2014 (along with those for other Forth and Tay projects, Seagreen Alpha and Bravo and Neart na Gaoithe) were subject to a petition for judicial review in early 2015. A decision was made by the UK Supreme Court in November 2017 to uphold the Scottish Ministers' decisions to grant the offshore consents.

In 2018 the original consent was updated, and a revised application was submitted to Scottish Ministers. In 2013 an Environmental Statement (ES) was produced to accompany the initial application based on the original design of the Wind Farm. This was also subsequently updated in 2018 with the production of an Environmental Impact Assessment Report (EIAR) to enable the use of progressions in technology following the original consent, through a reduction in turbine numbers (fewer turbines with larger generating capacity), and reduction in associated cabling (inter-array and export cables) in order to maximise efficiencies whilst minimising environmental impacts. The EIAR updated the 2013 ES and where impacts were predicted to be less than those already assessed, a new assessment was not undertaken as the conclusions drawn in the original 2013 ES remained valid.

Section 36 and marine licence consents for the revised design, were granted by Scottish Ministers in 2019. Since then, ICOL has successfully sought two variations to the Section 36 and Generation Station marine licence to optimise wind farm efficiency and both were granted consent in June 2023 (Section 36 Variation dated 14 June 2023 and Generation Marine Licence Variation MS-00010140 dated 15 June 2023).

In 2019 a revised marine licence was granted for the OfTI connecting the landfall location, near Cockenzie, East Lothian, and the Inch Cape Offshore Wind Farm. A varied Marine Licence (MS-00010593), to capture changes to deposit quantities and revision to the Offshore Export Cable Corridor coordinates, was granted 9th November 2023.

In November 2024, a Marine Licence (MS-00010984, formerly MS-00010879 from September 2024) was granted for boulder clearance and UXO identification during early construction of the Inch Cape Offshore Wind Farm.

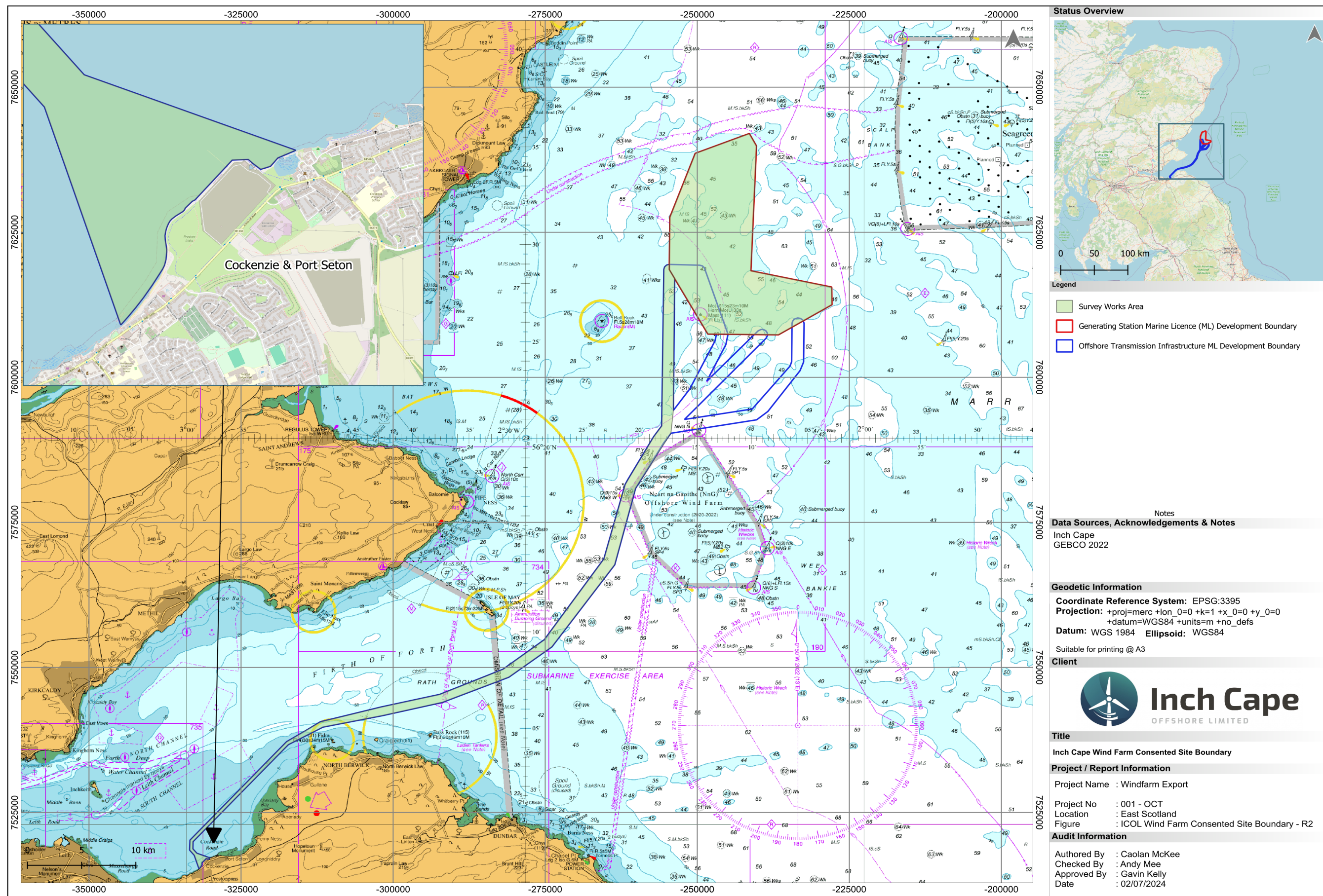


Figure 1.1: Survey Works Area in relation to the Inch Cape Offshore Wind Farm Development Area and Current Offshore Export Cable Corridor

1.2 Intention to Apply for a New Marine Licence

ICOL is applying for a marine licence for the boulder clearance and UXO identification for the whole Project, along the Export Cable Corridor (ECC) and within the Development Area (Figure 1.1)

Under the Marine (Scotland) Act 2010, a marine licence is required if a person or organisation intends to carry out 'the removal of substances/objects from the seabed using a vessel or similar' in the Scottish marine area, seaward of Mean High Water Springs (MHWS). ICOL intends to apply for a new marine licence under Part 4 of the Marine (Scotland) Act 2010 ("the 2010 Act") for boulder clearance and UXO identification activities.

UXO clearance operations, if required, will be covered by a separate application.

This document forms a suite of application documents constituting the complete marine licence application, namely:

- Supporting Environmental Information (SEI) Report (This document - Ref: IC02-INT-EC-OFL-012-INC-RPT-001);
- Report to Inform Appropriate Assessment (RIAA) (Ref: IC02-INT-EC-OFL-012-INC-RPT-002); and
- European Protected Species (EPS) Risk Assessment (RA) (NP Ref: 1356874).

ICOL is seeking to extend the current boulder clearance and UXO identification Marine Licence (MS-00010984, formerly MS-00010879) to the end of the construction period (Q4 2027) to enable UXO clearance operations throughout the entire construction period.

1.3 Scope of this Document

This document has been produced to provide the supporting information to inform the marine licence application, and contains the following:

- Introduction (Section 1);
- Description of the boulder clearance and UXO identification work (Section 2);
- Scope of Assessment (Section 3);
- Environmental Appraisal (Section 4);
- Summary and Conclusions (Section 5); and
- References (Section 6).

The boulder clearance and UXO identification activities have been considered against whether they could result in significant impacts.

2 Description of the Boulder Clearance and UXO Identification Activities

In order to undertake construction activities, a number of route preparation activities will be required to clear the area. This will include UXO identification through agitation of the seabed and boulder clearance. Any identified UXO will require mitigation, which will be through avoidance, relocation, or clearance (detonation). Clearance or relocation works are covered by a separate marine licence application.

2.1 Outline Programme

The boulder clearance and UXO investigation started in 2024 and it is expected to run, although not continuously, until the end of construction in Q4, 2027. Note, however, that the programme is indicative, and both the programme and sequencing is subject to change. It is anticipated the majority of the boulder clearance and UXO identification will be undertaken during early construction. As a worst case, it is considered that vessels will be undertaking work for this entire time. The programme is also contingent on the number of boulders to be relocated and cleared from the Development Area and the ECC (it is expected that up to 20,000 boulders might need relocation). Currently it is proposed that a total of five vessels will be working at any one time.

It is expected that the majority of the work will be within the Development Area, however there will also be a requirement for boulder clearance activities along the ECC.

2.2 Outline Method Statement

2.2.1 Boulder Clearance and Relocation

A boulder relocation campaign will be required across the Inch Cape site (development area and Export Cable Route (ECR) – 'Project') to allow installation of the Offshore Substation Platform (OSP), WTGs, and inter-array and export cables.

It is expected that boulders between the sizes of 0.2 m to 2 m will require relocation. Boulders will be moved outside the planned jacking zones and along cable corridors. Boulder relocation will be undertaken using either a Subsea Multi Tool Remotely Operated Vehicle (SMT-ROV), a Utility Remotely Operated Vehicle (UTROV) Smart Tine Grab, an auxiliary ROV system (AUXROV), or similar. Subsurface boulders may require the use of a UTROV Smart Clamshell Grab. A boulder plough may also be used to relocate boulders up to 1 m in size once larger boulders have been relocated.

All boulder relocation equipment (ROVs, grabs and ploughs) will be equipped with an Ultra-Short Baseline (USBL) system to monitor positioning. In low visibility working areas an imaging sonar may also be used to aid identification of boulders. Once an asset area has been cleared a multi-beam or sonar survey will be undertaken to ensure that there are no additional unidentified boulders or seabed debris.

2.2.2 UXO Identification

A pre-construction UXO survey to enable the discrimination of pUXO threat items will be undertaken across the Project (DA and ECC). Work will be centred on the WTG (300 m radius) and OSP (350 m

radius) locations, and a 100 m corridor around the inter-array and export cables.

This will result in the creation of a Master Target List (MTL) to inform the UXO target identification works. The exact details of the offshore, nearshore and intertidal UXO target investigation work are yet to be confirmed, however, likely methods are outlined below.

2.2.2.1 Offshore

All offshore UXO target investigation work will be undertaken using a WROV. The WROV will fly a 5 x 5 m or 10 x 10 m grid survey over the target position (with the potential to be extended to a 15 x 15 m grid if no magnetic target is identified). If the pUXO target is located the WROV will approach the target using a camera and sonar to undertake a close visual inspection. If the target is buried, the WROV-mounted suction tool will be used to gently excavate the seabed around the pUXO to a depth of 1 m.

After inspection the pUXO will be identified as either non UXO (nUXO) (debris) or confirmed UXO (cUXO). If the item is identified as nUXO it will be relocated outside the clearance area. If the target is identified as a cUXO a thorough inspection will be undertaken to identify the type and state of the cUXO.

Using this methodology, it is estimated that seven to eight pUXO targets can be identified and excavated a day.

2.2.2.2 Nearshore

Nearshore (in water depths < 10 m) UXO target investigation will be undertaken by divers. This involves a diver deployed with a hand-held magnetometer to survey the area and pinpoint the location of the pUXO. The diver will survey a 5 x 5 m grid area over the target position (with the potential to be extended to a 10 x 10 m area if no target is identified). Buried targets will be excavated using a diver-held airlift or high-pressure water jet. Individual target information (e.g. type and state) will be gathered by the diver. Depending on visibility a HD Sonar camera may be used to aid identification of seabed items.

It is anticipated that using this methodology three to four pUXO targets can be identified and excavated a day.

2.2.3 Vessels

The number and size of vessels required for boulder relocation is dependent on the number of boulders to be relocated and the type of equipment to be used. A maximum of two vessels (equipped with ROVs) is likely to be required.

A maximum of three vessels are likely to be used for the pUXO target investigation work. One vessel, equipped with ROVs, for offshore pUXO target investigation and two vessels for deployment of divers for nearshore pUXO target investigation (totalling five vessels).

For each boulder clearance and UXO identification event, vessels may undertake 24/7 concurrent working and the target investigation strategy will be planned to minimise vessel transit lengths between targets.

2.3 Licensable Marine Activities

The following activities associated with the boulder clearance and UXO identification are considered to be licensable under the Marine (Scotland) Act 2010, and are being applied for as part of this licence application:

- Removal of substances or objects from the seabed; and
- Deposits in the sea or on / under the seabed.

3 Scope of Assessment

This review and all subsequent assessments have been undertaken with particular regard to the environmental sensitivities of the geographical area that may be affected. These were determined through a review of relevant designated sites, specifically those closest to the location of the boulder clearance and UXO identification activities (shortest straight-line distances provided) (Figure 3.1):

- Outer Firth of Forth and St Andrews Bay Complex SPA (direct overlap);
- Forth Islands SPA (direct overlap);
- Firth of Forth SPA (direct overlap);
- Isle of May SAC (4.3 km);
- River South Esk SAC (23.97 km);
- Firth of Tay and Eden Estuary SAC (24.53 km);
- Firth of Tay and Eden Estuary SPA (25.23 km);
- Berwickshire and North Northumberland Coast SAC (26.45 km);
- St Abb's Head to Fast Castle SPA (27.42 km);
- Fowlsheugh SPA (33.11 km);
- Ythan Estuary Sands of Forvie and Meikle Loch SPA (61.86 km); and
- Buchan Ness to Collieston Coast SPA (82.23 km).

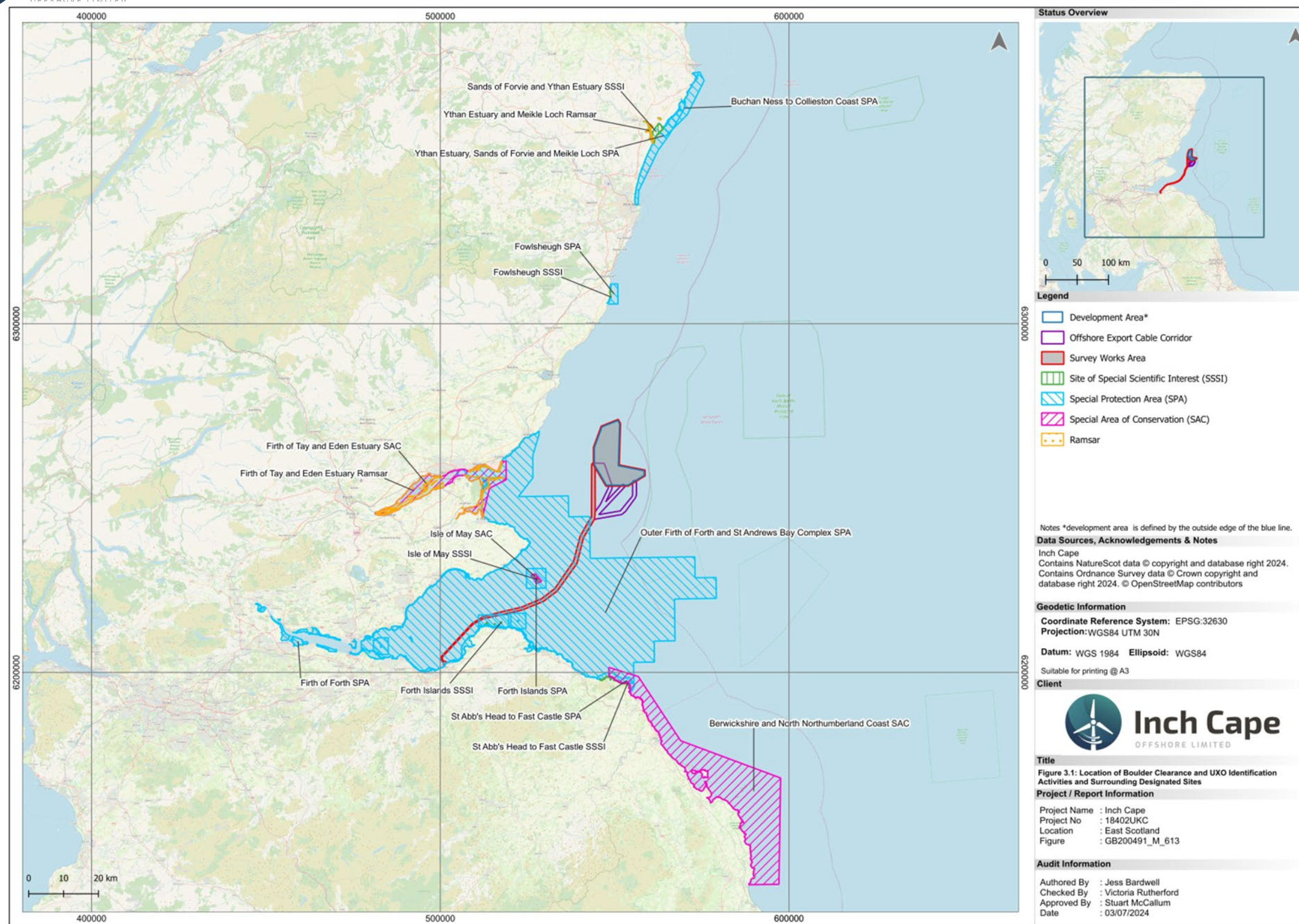


Figure 3.1: Location of the Boulder Clearance and UXO Identification Activities and Surrounding Designated Sites

3.1 Embedded Mitigation

There are a number of embedded mitigation measures which will be implemented to reduce the potential for certain impacts:

- Compliance with IMO conventions including COLREGs and SOLAS to ensure standard levels of navigation and vessel safety are adhered to;
- Issue of Notice to Mariners (NtM) notifying of the type and location of the boulder clearance and UXO activities;
- Implementation of appropriate safety distances during UXO investigation;
- Waste management on board vessels is covered the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008. These regulations implement revised Annex IV of MARPOL 73/78 (Regulations for the Prevention of Pollution by Sewage from Ships), and Annex V of MARPOL 73/78 (including amendments) (Regulations for the Prevention of Pollution by Garbage from Ships);
- Implementation and adherence to identified AEZs; and
- Following the protocol in case of discovering new archaeology, the Scottish Wildlife Watching Code, waste management, incident reporting, chemical use, fluorinated greenhouse gases and INNS which are all included in the Offshore Environmental Pre-Construction Requirements (IC02-INT-EC-OFM-001-INC-RQS-001).
- Appropriate biosecurity, aimed at preventing invasive non-native species (INNS).

3.2 Evaluation of potential impacts

An evaluation of potential environmental impacts is provided in Table 3.1, below, with additional information provided in Section 4 (Environmental Appraisal), where necessary. Where mitigation is considered to adequately be in place to minimise an impact to as low as reasonably practicable, e.g. pollution and INNS risk, these are not considered further.

Table 3.1: Summary of Potential impacts Relating to the Boulder Clearance and UXO Identification Activities
(grey – receptor does not require any further information, black text – further information provided in Section 4)

Receptor	Further information required	Reasoning
Metocean and Coastal Processes	No	It is recognised the boulder clearance and UXO identification activities will remove boulders or disturb sediment during identification of UXO. The works will be temporary and localised in nature, and given the limited interaction with the seabed, it is considered there is no potential for any impact, other than negligible, highly localised effects, and therefore no potential for significant effects to arise, and as such there is no requirement for further assessment.
Benthic Ecology	Yes	Some minor temporary disturbance in areas where boulder clearance and UXO identification activities will be undertaken, may result in temporary benthic habitat disturbance. Further consideration is presented in Section 4.1
Natural Fish and Shellfish	Yes	Some minor temporary disturbance in areas where boulder clearance and UXO identification activities will be undertaken, may result in temporary fish and shellfish habitat disturbance. Further consideration is presented in Section 4.2.
Marine Mammals	Yes	The boulder clearance and UXO identification activities will result in increased vessel presence and use of survey equipment, therefore some minor temporary disturbance to marine mammals may occur. Further consideration is presented in Section 4.3.
Ornithology	Yes	The boulder clearance and UXO identification activities will result in increased vessel presence over a prolonged period of time (spanning multiple years), and indirect effects on prey species, therefore some minor temporary disturbance to ornithological receptors may occur. Further consideration is presented in Section 4.4.

Receptor	Further information required	Reasoning
Seascape, Landscape and Visual Impact Assessment (SLVIA)	No	<p>No visual impact, other than localised and temporary vessel presence in an area of already high vessel traffic.</p> <p>No further assessment required.</p>
Cultural Heritage and Marine Archaeology	Yes	<p>Some minor temporary disturbance in areas where boulder clearance and UXO identification activities will be undertaken, may result in sediment disturbance potentially affecting cultural heritage assets.</p> <p>Further consideration is presented in Section 4.5.</p>
Commercial Fish	Yes	<p>The boulder clearance and UXO identification activities will result in up to five additional vessels. Additional vessels working in the area has the potential for effects on the commercial fishing community.</p> <p>Further consideration is presented in Section 4.6.</p>
Shipping and Navigation	Yes	<p>The boulder clearance and UXO identification activities will result in up to five additional vessels. Additional vessels working in the area have the potential for effects on shipping and navigation in the area.</p> <p>Further consideration is presented in Section 4.7.</p>
Socio-Economics and Tourism	No	<p>As there are no known tourism operators operating in the Development, there is no potential for significant effects to arise, and as such no requirement for further assessment.</p>
Military and Civil Aviation	No	<p>No military or civil aviation activity occurs in the Development, therefore there is no potential for significant effects to arise, and as such no requirement for further assessment.</p>
Other Human Considerations	No	<p>There may be very short periods of time during the works when there could be disruption to other human users of the environment.</p> <p>Short term and partial closures are not predicted to result in any significant effects on other users as large areas of sea will remain accessible. As such there is no potential for significant effects to arise, and no requirement for further assessment.</p>

Receptor	Further information required	Reasoning
Climate Change and Greenhouse Gases	No	<p>It is recognised that some greenhouse gas emissions, arising from vehicular sources will be emitted as part of this proposed work. Due to the temporary and localised nature of the works, greenhouse gas emissions and waste materials are not considered to represent any potential for significant effects. It is considered that the works, as applied for, represent the lowest overall environmental effect. There is no potential for significant effects to arise, and as such, no requirement for further assessment.</p> <p>Furthermore, the objective of the activities is to support the development of the Inch Cape Offshore Wind Farm which will generate a renewable source of electricity and contribute to a reduction in Scotland's greenhouse gas emissions. As per the Inch Cape 2021 Carbon Balance Assessment ¹, the Inch Cape Project's annual greenhouse gas emissions saving from displacing gas-fired generation is predicted to be 1.43 Metric tonnes of CO₂ per year. This is equivalent to a reduction of 3.1% of the annual total greenhouse gas emissions in Scotland (based on 2019 records).</p>

¹[4-ICOL-OnTW-EIA-Volume-3-Technical-Appendices.pdf \(inchcapewind.com\)](#)

4 Environmental Appraisal

Where identified in Table 3.1 as 'required', further information and consideration of environmental effects arising from the boulder clearance and UXO identification activities throughout construction of the Inch Cape OWF are provided in this section through a review of existing environmental assessment conclusions, followed by an updated assessment for the boulder clearance and UXO identification activities.

The boulder clearance and UXO identification activities are analogous to other construction phase work that may be undertaken for the installation of an offshore wind farm (i.e., short duration, localised, and utilised for facilitating the construction) and therefore it is considered that the baseline and relevant construction phase impacts from the existing ES and EIAR are relevant to the consideration of whether significant effects may arise from the proposed work.

4.1 Benthic Ecology

4.1.1 Baseline

The baseline investigations found the environment surrounding the project was relatively stable in sedimentary composition and contamination levels, with little change observed in the infaunal content for ten – 20 years. A total of nine sedimentary biotopes were identified across the development area and one rocky biotope, and nine biotopes within the proposed ECC (Table 4.1). The dominant biotope in the Development Area was found to be SS.SMx.CMx.MysThyMx.

Table 4.1: Biotopes Recorded at the Development Area and the Offshore Export Cable Corridor of the Inch Cape Offshore Wind Farm

Biotope Code	Name
Development Area	
SS.SSa	Sublittoral sands and muddy sands
SS.SCS.CCS	Circalittoral coarse sediment
SS.SCS.CCS.PomB	<i>Pomatoceros triqueter</i> with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles
SS.SCS.CCS.MedLumVen	<i>Mediomastus fragilis</i> , <i>Lumbrineris</i> spp. and venerid bivalves in circalittoral coarse sand or gravel
SS.SCS.OCS	Offshore circalittoral coarse sediment
SS.SMx.CMx	Circalittoral mixed sediment

SS.SMx.CMx.MysThyMx	<i>Mysella bidentata</i> and <i>Thyasira</i> spp. in circalittoral muddy mixed sediment
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SS.SMx.CMx.OphMx	<i>Ophiothrix fragilis</i> brittlestar beds on sublittoral mixed sediment
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CR.HCR.Xfa	Mixed faunal turf communities.
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Artica islandica

Offshore Export Cable Corridor

SS.SMu.CFiMu.SpnMeg	Circalittoral muddy sand with seapens and burrowing megafauna
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SS.SMx.CMx

SS.SMx.CMx,

SS.SSa.CMuSa,	Subtidal soft sediments
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SS.SMx.CMx.MysThyMX

SS.SMx.CMx.FluHyd

SSSMx.CMx

SS.SMx.CMx.FluHyd

SS.SMx.CMx.OphMx

CR.MCR.EcCr.FaAlCr	Circalittoral and infralittoral coarse and mixed sediment, cobbles, boulders and rock with sessile epifaunal and algal communities
CR.MCR.EcCr.FaAlCr.Bri	

CR.MCR.EcCr.FaAlCr.Pom

CR.MCR.EcCr.FaAlCr.Adig

SS.SCS.CCS

Preliminary observations of the DDV data indicated that the habitat and biota present in the survey area at the Development Area are typical of North Sea sedimentary communities. Although a wide range of sediment types were found to be present within the survey area as a whole – including coarse sand, shell and stone gravel, pebble, and cobble – the dominant substrate type recorded was rippled sand with shell gravel. No areas of bedrock or biogenic reef features were recorded.

The key species present in the survey area were found to be: *Alcyonium digitatum*, *Pomatoceros triqueter*, *Munida rugosa*, *Flustra foliacea*, and *Asterias rubens*. The brittlestar *Ophiothrix fragilis* was recorded in two locations at high densities, and the ocean quahog (*Artica islandica*) was recorded in

the area (though only as small juvenile individuals).

Important habitats identified in the OECC area included “burrowed mud”, a Scottish Priority Marine Feature (PMF). This type of habitat (represented here by the SpnMeg biotope) covered extensive areas of the proposed Offshore Export Cable Corridor and is likely to occur widely throughout the region. Cobbles, boulders and rocky outcroppings around the Isle of May were regarded as having moderate to low resemblance to Annex I (EC Habitats Directive) stony and rocky geogenic reef.

4.1.2 Existing ES / EIAR conclusions

The effects of the construction of the Development on the benthic ecology of the area are set out in Chapter 12 of the 2013 Inch Cape Offshore Environmental Statement (ES). No further assessment was considered to be required for the revised design (2018) EIAR. The impact assessment concluded that there would be no significant impact on benthic ecology from the construction and operation of the Development.

4.1.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Temporary disturbance / loss of habitat; and
- Temporary increases in SSC leading to smothering.

4.1.3.1 Temporary Disturbance / Loss of Habitat

The boulder clearance and UXO identification activities may result in temporary habitat loss and disturbance.

Both the Development Area and the ECC are comprised of mainly sedimentary habitats (Table 4.1), and thus such small scale displacement of sediment through UXO Identification works is not considered to represent any greater than a negligible impact on these habitats. Any areas of sediment disturbed through UXO identification are predicted to recover in form and community over the short term (i.e., within two years), considering the lack of interruption of sedimentary and other physical processes in the area, and large area of equivalent habitat from which species are able to recolonise the affected area.

Boulder clearance (through relocation over a short distance) will lead to some disturbance of boulder communities, however once relocated the habitat will be able to be rapidly recolonised. Considering the tidal nature of the area, it is considered that recolonisation of any sessile fauna lost will be rapid, and recovery evident in the short term.

4.1.3.2 Temporary Increase in SSC

The boulder clearance and UXO identification activities have the potential to physically disturb the seabed through sediment clearance around potential UXO, resulting in a temporary increase in SSC within the water column.

Bedrock and stony reef features are sensitive to smothering (> 5 cm is the benchmark used by the Marine Life Information Network (MarLIN)). The sediment arising from the activities will be limited in volume, being dispersed into a naturally dynamic system with cyclical changes in turbidity. Benthic

features are largely adapted to such small fluctuations. The boulder clearance and UXO identification activities will be conducted over a small area and, as such, limited arisings into the water column are expected. Given the small sediment volume arisings, there is no expectation that the sediment would travel a considerable distance, and no expectation that sufficient sediment will be disturbed that any fauna would be subject to smothering at a degree that could lead to mortality.

4.1.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. No significant effects are predicted to arise on the benthic ecology of the area as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for construction activities at the Inch Cape OWF.

4.2 Natural Fish and Shellfish

4.2.1 Baseline

A range of species are present in the Development Area and along the ECC, many of which have commercial importance and have spawning or nursery grounds in the immediate area. These include a number of fin fish, elasmobranchs (sharks, skates and rays) and shellfish. Many of the fish species are highly mobile and widely distributed over both the Development Area and the ECC and have a high commercial value.

A number of species of conservation importance (PMF, UK-BAP and OSPAR) were found during EIA baseline surveys, including: Norway pout (*Trisopterus esmarkii*), whiting (*Merlangius merlangus*), sandeel (*Ammodytes tobianus*), mackerel (*Scomber scombrus*) herring (*Clupea harengus*), cod (*Gadus morhua*), saithe (*Pollachius virens*), ling (*Molva molva*), spurdog (*Squalus acanthias*), common skate (*Dipturus batis*), and anglerfish (*Lophius piscatorius*).

The Development Area was found to be largely suitable for sandeel, with discrete patches of prime and sub-prime sediment (Appendix 13B in ICOL, 2013). The site is also nestled between two large herring spawning grounds (north and south of the Firth of Forth), as defined by Coull *et al.* (1998). Herring in the North Sea spawn between August and October², and sandeel between September and March².

4.2.2 Existing ES / EIAR conclusions

The effects of the construction of the consented Inch Cape Offshore Export Cable works on natural fish and shellfish ecology were assessed in the original application submitted in 2013 and the 2018 EIAR, both of which determined the construction and operation of the Development to be not significant.

4.2.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Direct and indirect temporary habitat disturbance.

4.2.3.1 Direct and Indirect Temporary Habitat Disturbance

The boulder clearance and UXO identification activities may result in direct and indirect disturbance to fish habitat during the activities. Direct disturbance to the seafloor would occur during the activities but also temporary increases in SSC in the vicinity of the activities (covered in Section 4.1).

The proposed work will affect a negligibly small area of seabed, with small discrete locations disturbed in order to investigate UXO or relocate boulders. There is therefore no potential to significantly affect fish populations in the area through the works.

With regards to spawning habitats, the majority of fish are pelagic spawners (releasing eggs into the water column) and therefore will not be directly affected by habitat disturbance. Some species, namely herring and sandeel, are demersal spawners, laying their eggs on the seabed, and requiring specific substrate. There is no direct overlap with herring spawning grounds and considering any sediment

² <https://www.ices.dk/about-ICES/projects/EU-RFP/EU%20Repository/ICES%20FishMap/ICES%20FishMap%20species%20factsheet-herring.pdf>

arisings will be small scale and localised, no potential for indirect effects. Though sandeel are potentially present in the area, suitable habitats for sandeel are common throughout the North Sea and are not restricted to the Development area and the ECC. Sandeel are also not considered sensitive to the small increases in SSC likely to arise from the works.

The area is also considered important for a range of commercially exploitable shellfish species (see also Commercial Fisheries, Section 1.1), however considering the small scale of the works, and limited seabed disturbance that will arise, the activities will have no more than a negligible effect on shellfish species, with no population level consequences.

4.2.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. No significant effects are predicted to arise on the fish and shellfish ecology of the area as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

4.3 Marine Mammals

4.3.1 Baseline

The most common species recorded in the Firths of Forth and Tay, identified as key receptors, are as follows:

- Bottlenose dolphin (*Tursiops truncatus*);
- Harbour porpoise (*Phocoena phocoena*);
- Minke whale (*Balaenoptera acutorostrata*);
- White-beaked dolphin (*Lagenorhynchus albirostris*);
- Grey seal (*Halichoerus grypus*); and
- Harbour seal (*Phoca vitulina*).

Of the marine mammals listed above, grey seal, harbour seal and bottlenose dolphin are of particular relevance with regards to the inshore boulder clearance and UXO identification activities. Other cetaceans such as minke whales and white-beaked dolphins are more likely to be present further offshore.

Generally, the populations are in favourable conservation status (i.e., not at risk). This is true of cetaceans, however while the overall status of harbour seal is favourable, the local population in the Firth of Tay and Eden Estuary SAC is predicted to be in overall decline.

The Offshore Export Cable Corridor passes relatively close to the south-west of the Isle of May (approximately 5.5 km at the nearest point), an area designated as an SAC for grey seal. Around 2,000 pups are born each year on the island, with lower numbers recorded on smaller islands in the southern half of the Firth of Forth. A fast-growing colony can also be found at Fast Castle, on the southern outer reaches of the Forth.

Bottlenose dolphins (*Tursiops truncatus*) are primarily coastal, generally in waters less than 25 m deep, and whilst there appears to be no reports of bottlenose dolphins near to Cockenzie they have been recorded along the Northumberland coast, suggesting they occur across the Offshore Export Cable Corridor.

4.3.2 Existing Assessment

The effects of construction of the consented Inch Cape OWF works on marine mammals were assessed as part of the revised application in 2018 (EIAR, Chapter 10) and determined to be not significant.

4.3.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Disturbance from increased underwater noise; and
- Collision risk from increased vessel movement.

4.3.3.1 Disturbance from Noise

The boulder clearance and UXO identification activities will require the use of ultra short baseline (USBL). The sounds produced fall within the hearing range of all marine mammal functioning groups, however the sounds do not reach the SPL threshold therefore there is no risk of auditory injury. A behavioural response can be expected through avoidance. An EPS risk assessment has been produced and is accompanying this application (NP Ref: 1356874) which concludes that for Multi Beam Echo Sounder (MBES) and imaging sonar there is no potential for auditory injury to EPS and there is negligible potential for behavioural responses from EPS. For USBL, there is no potential for auditory injury to EPS, however there is the potential for EPS to respond. However, any disturbance is deemed short-term, sporadic, reversible, and without any likely negative effect on the species.

Additional mitigation includes:

- In the months of September to December inclusive, any survey work within 20 km of the Isle of May SAC will start during daylight hours and in good sea states (Beaufort 3 or lower); and
- In the last two weeks of July and the first two weeks of August, vessels will as far as is practicable employ slow speeds, steady courses and avoid sailing through large rafts of birds on the sea.

Other anthropogenic noise is considered to be negligible as no detectable noise is expected to arise from general vessel presence and the boulder clearance and UXO identification activities. Marine mammals are considered to be habituated to the presence of vessels and as such are used to detecting and avoiding them. The species are small and highly mobile making them well adapted to undertake avoidance behaviours.

4.3.3.2 Collision Risk

There will be increased vessel presence in the vicinity of the boulder clearance and UXO identification area of works due to the boulder clearance and UXO identification activities during construction (until Q4, 2027). These have the potential to increase the risk of marine mammal collision with vessels resulting in injury or death, particularly during the autumn pupping period (October to January).

The proposed boulder relocation and pUXO target investigation works will require a maximum of five vessels at any one time for each boulder clearance and UXO identification event. The vessels will be stationary during the works and will follow predetermined lines between work sites. The consistent speed and direction of travel employed whilst travelling between work sites will mean that animals can predict the path of the vessels and potentially alter their direction of travel, thus reducing the risk of collision. Additionally, the presence of up to five survey vessels is unlikely to significantly increase the vessel traffic in the area.

During transits, when vessel speed may be greater, transit watches will be conducted (See EPS-RA (NP Ref: 1356874; IC02-INT-EC-OFL-012-INC-RPT-005)).

An observer on the bridge of all vessels will keep watch for EPS, basking sharks and seals during all transits to and from the work sites. Any sightings will be communicated to the Officer on watch as soon as is practicable and the following actions implemented:

- The Officer on watch will ensure that EPS, basking sharks and seals are avoided where safe to do so; and
- The Officer on watch will minimise high powered manoeuvres or rapid changes of course where this does not impair safety.

The observer may be the Officer on watch, Master of the vessel, a member of the bridge crew or another member of the ship's crew. Observers will be briefed on the Scottish Marine Wildlife Watching Code³ and Basking Shark Code of Conduct⁴.

Although the consequences of collision (injury or mortality) can be severe, the likelihood of occurrence is considered to be extremely low and therefore there is no potential for significant effect.

4.3.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. With the mitigation listed, no significant effects are predicted to arise on marine mammals as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

³ <https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/scottish-marine-wildlife-watching-code>

⁴ <https://www.sharktrust.org/Handlers/Download.ashx?IDMF=6137b1a1-8518-4327-9922-7b280acb8336>

4.4 Ornithology

4.4.1 Baseline

The Development Area and the EEC are situated within / pass through or are in close proximity to a number of European designated sites for ornithological features. The Offshore Export Cable Corridor passes through the intertidal area of the Firth of Forth, passing near to the Firth of Forth SPA, Ramsar site and Site of Special Scientific Interest (SSSI), and through the Outer Firth of Forth and St Andrews Bay Complex SPA. This shoreline contains a variety of coastal and estuarine habitats which attract large numbers, and a wide variety, of overwintering and passage wetland birds (waders and waterfowl) to the area. Many of the sites are designated for breeding seabird features, with the breeding season for most seabird species falling between April and September. Outside the breeding season the wider area is used for foraging, resting and roosting by seabirds. Adult seabirds with active nests are likely to be constrained by foraging distance in order to maintain energy.

4.4.2 Existing Assessment

The effects of construction of the consented Inch Cape Offshore Export Cable works on ornithology have been assessed as part of Chapter 15 of the 2013 ES (ICOL, 2013) and determined to be not significant. This was not reassessed for the revised design as the design changes were deemed to fall within the existing worst case assessed.

4.4.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Vessel disturbance and indirect effects through impacts on prey species.

4.4.3.1 *Vessel Disturbance and Indirect Effects through Impacts on Prey*

Vessel disturbance

There will be increased vessel presence within the SAC due to the boulder clearance and UXO identification activities with a maximum of five vessels working concurrently during any one boulder clearance and UXO identification event during construction (until Q4, 2027). Although these have the potential to disturb bird species, temporarily displacing them or affecting foraging behaviour, the area of the Firth of Forth experiences very high shipping densities on a daily basis (an average of 22 and 37 unique vessel movements per day across the Development Area and Offshore Export Cable Corridor respectively (ICOL, 2018)) and thus it is expected that all birds who regularly utilise the area will have an increased tolerance for vessel presence in region. The duration of work in any one location will be temporary, with any effects highly localised around the working vessel. Vessels will be moving slowly and in a predictable manner, and any visual or noise related disturbance will therefore be minimal. In addition, the SPA covers a large area and there is an abundance of available and equivalent feeding and loafing habitats in the immediate and wider area.

Accordingly, it is not considered this work will significantly disturb or displace ornithological species. Ornithological features are already acclimated to the high level of vessel traffic in the area which will not be materially altered by the proposed work. The work will be undertaken from vessels moving in a predictable and slow manner, and there is an abundance of equivalent habitat available. As such, it is considered there is no potential for the work to result in significant effects as a result of vessel

disturbance.

Indirect Effects through Impacts on Prey

Bird species have the potential to show distributional changes due to impacts on prey species. Prey availability has been correlated with breeding success (Bustnes *et al.*, 2013). Fish such as herring and sandeel are a key prey resource where they both have the potential to be impacted by disturbance to the specific sediment, which is relied upon as a key diet component. Long term studies in the Firth of Forth highlighted a long-term decline in the overall prevalence of sandeel in kittiwake chick diet, concomitant with an increase in the relative prevalence of clupeids in Scottish waters (Walness *et al.*, 2018) indicating adaptable diet.

Disruption to the prey habitat at any one location is anticipated to be temporary and of short duration and habitat recovery would be rapid, given the existing conditions. In addition, there is extensive adjacent equivalent prey habitat in the surrounding area whereby prey availability will not be affected by the boulder clearance and UXO identification activities. The work will be undertaken over multiple years during construction (i.e., until Q4, 2027) and although there will be overlap with key spawning periods of prey resource, these are considered to be temporary and considered to affect a negligibly small area of seabed, with discrete locations disturbed during boulder relocation (Section 4.2.3.1).

Given the limited impact on prey resource predicted, the short-term and relatively localised nature of the boulder clearance and UXO identification activities, it is considered there is no potential for the work to result in significant effects as a result of impacts to prey species.

4.4.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. No significant effects are predicted to arise on the ornithology receptors as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

4.5 Cultural Heritage and Marine Archaeology

4.5.1 Baseline

During baseline surveys, a number (135) of marine geophysical anomalies were identified within the Development Area including four recorded wrecks / obstructions, four wrecks, 37 counts of debris, two seafloor disturbances, 78 dark reflectors and 10 magnetic anomalies. The ECC returned a total of 378 geophysical anomalies including two recorded wrecks / obstructions, two wrecks, 47 counts of debris, three seafloor disturbances, one depression, 79 dark reflectors, and 244 magnetic anomalies.

Archaeological features are sporadic and not concentrated in any one area within the Development Area or the ECC and the potential exists for further unknown cultural heritage features to be identified including prehistoric, maritime and aviation features.

4.5.2 Existing Assessment

The effects of construction of the consented Inch Cape OWF on cultural heritage assets have been assessed in Chapter 17 of the original ES (2013) and determined to be not significant.

4.5.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Damage to or removal of heritage features resulting from direct physical impacts.

4.5.3.1 *Damage to or Removal of Heritage Features Resulting from Direct Physical Impacts*

The boulder clearance and UXO identification activities have the potential to affect marine cultural heritage and marine archaeology through direct impacts to the seabed.

There are a number of known archaeological features within the Development Area and along the ECC, and there is the possibility that un-recorded assets will be identified during the works, despite the activities being minimally invasive. It is not expected that there will be many features which have not been identified, however owing to the dynamic nature of the North Sea, it is possible assets could have moved and therefore this cannot be ruled out.

Any work to be undertaken will avoid all designated Archaeological Exclusion Zones (AEZs) specified for the Development. A Protocol for Archaeological Discoveries (PAD) will be in place for any newly discovered cultural heritage assets.

Specific mitigation will include:

- Adherence to known Archaeological Exclusion Zones (AEZ); and
- Archaeological procedure and mitigation is set out in full in the Development's PAD report (IC02-INT-EC-OFC-021-INC-PLA-001).

The work will involve a maximum of five vessels working concurrently across the Development Area and the ECC and the activities taking place will be intermittent, of short duration and limited in scale.

4.5.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. With mitigation, no significant effects are predicted to arise on the cultural heritage receptors as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

4.6 Commercial Fisheries

4.6.1 Baseline

The Firth of Forth is an important area for commercial fisheries. Key fisheries in the area include the scallop fishery, the creel fishery, the squid fishery and the *Nephrops* fishery. Other fisheries of potential growing importance include both whelk and mackerel.

The Development Area and Offshore Export Cable Corridor are located in ICES rectangles 41E7 and 42E7 and these two rectangles contain valuable Scottish fishing grounds.

Over the five-year period considered in the EIAR between 2011 and 2016, the majority of landings in 41E7 were made up of *Nephrops* which accounted for 53% of all landings (by value) which equates to an annual average of £4,093,313. Landings of lobster were the second highest in this rectangle (34% - £2,602,308), with smaller quantities of crabs (edible and velvet crabs 5%), scallops (3%), razor clams (1%) and squid (1%). Other notable species captured in this rectangle include mackerel and whelks, although together they account for less than 1.2% of the average annual landings.

In rectangle 42E7 lobsters made up almost half the landings in the study period (49% which equates to an annual average £1,264,203), followed by scallops (21% - £529,645) and crabs (edible 10% and velvet swimming crabs 6%), squid (6%), *Nephrops* (6%) and mackerel (1%) and other species.

4.6.2 Existing Assessment

The effects of construction of the consented Inch Cape OWF works on the commercial fisheries of the area is set out in Chapter 14 of the 2018 Inch Cape Offshore EIA Report and were assessed as not significant.

4.6.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Disruption to existing fishing activities from temporary loss or restricted access to fishing grounds, increased steaming times to fishing grounds, and displacement of fishing vessels into other areas.

4.6.3.1 Disruption to Existing Fishing Activities

The boulder clearance and UXO identification activities will require up to five vessels working until the end of construction (until Q4, 2027), with some concurrent 24/7 working possible. The work will be undertaken over a large area within the Development Area and along the ECC, however in any given area the work will be relatively short term, localised and small scale. The vessels will work in an area with a high presence of vessel traffic and the work undertaken will have predictable and slow vessel movements.

The Inch Cape project has a Project Fisheries Liaison Officer (FLO) who will ensure effective, ongoing communication between ICOL and the fisheries stakeholders, which will include communication surrounding these activities. The FLO will ensure key information surrounding the work, including timings and location, is communicated on an ongoing basis. Prior to any work being undertaken, and during the work, all appropriate notices and communications will be shared via the Kingfisher Bulletin updates and via Notice to Mariners (NtMs).

Through good communication and cooperation, there will be no significant disruption to commercial fishery receptors, and no significant impact on this receptor group.

4.6.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. Considering the mitigation in place, no significant effects are predicted to arise on the commercial fisheries receptors of the area as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

4.7 Shipping and Navigation

4.7.1 Baseline

The Firth of Forth is an area with busy shipping, fishing and recreational vessel use. Automatic Identification System (AIS) data revealed approximately three to four vessels pass through the Development Area per day (mostly fishing vessels) and an average of 20 vessels use the ECC each day (33% fishing vessels, and 28% tankers).

4.7.2 Existing Assessment

The effects of the OfTW on shipping and navigation of the area is set out in the 2013 and 2018 ES and EIAR which concluded impacts were not significant.

4.7.3 Effect of the Boulder Clearance and UXO Identification Activities

Potential effects from the boulder clearance and UXO identification activities include:

- Increased vessel presence.

4.7.3.1 Increased Vessel Presence

The boulder clearance and UXO identification activities have the potential to result in an increase in vessels in the Development Area and along the ECC throughout the construction period (i.e., until Q4, 2027). The Firth of Forth is, however, a naturally busy shipping area and the presence of the five vessels associated with this work would not materially contribute to an increase in overall vessel traffic giving rise to potential significant effects.

Standard mitigation measures will be implemented to ensure impacts to shipping and navigation is kept to a minimum, including NtM and Kingfisher Bulletin notices will be issued in advance of the planned activities.

4.7.4 Conclusion

The change in programme of boulder clearance and UXO identification activities until the end of construction (Q4, 2027) does not affect the original conclusions. Given the mitigation to be implemented, no significant effects are predicted to arise on the shipping and navigation of the area as a result of the boulder clearance and UXO identification activities. The impacts which may occur are also considered to be lesser in scale and magnitude than those already consented (and assessed as not significant) for constructions activities at the Inch Cape OWF.

4.8 Cumulative Considerations

As the boulder clearance and UXO identification activities are very localised in extent and will not result in any significant effects on any receptor, it is considered that there is no potential for significant cumulative effects to arise.

The only other plans or projects that could be considered to act cumulatively are:

- The other Inch Cape OWF pre-construction and construction related activities;
- Neart na Gaoithe construction (and maintenance activities);
- EGL-1 construction;
- Seagreen 1a OWF construction; and
- Berwick Bank OWF construction.

There is the potential for work to be undertaken during the same timeframe and at the same spatial location.

All effects of the Inch Cape OWF construction were considered to be not-significant, as are any effects that may result from the boulder clearance and UXO identification activities. As such, it is therefore considered that all effects at a cumulative level will not be significant, due to the short duration of each boulder clearance and / or UXO identification event and, and limited spatial scale over which all will act.

5 Summary and Conclusion

It can be concluded that the change in programme of UXO clearance activities until the end of construction (Q4, 2027) does not affect the original conclusions. The boulder clearance and UXO identification activities will take place within the existing consented Inch Cape Development Area and the ECC. Although the boulder clearance and UXO identification activities may occur at any time until the end of construction (Q4, 2027), each individual boulder clearance and UXO identification event is relatively small scale and localised at individual targets. Based on the above considerations of impacts on all potential environmental receptors, it can be concluded that the boulder clearance and UXO identification undertaken throughout the entire construction period (described in Section 2) will not result in any potential significant effects, taking into consideration appropriate mitigation as detailed.

6 References

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