Scottish and Southern Electricity Networks - Transmission

LT374 Shetland 2 - Marine HVDC Link

Marine Survey EPS Risk Assessment

ASSIGNMENT A101033-S00
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XODUS

Aberdeen

5th Floor Capitol Building
429-431 Union Street . Aberdeen
AB11 6DA . UK

T +44 (0)1224 628300
E femke.deboer@xodusgroup.com

www.xodusgroup.com

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CONTENTS

ACRONYMS

TERM	DEFINITION
3D	3-Dimensional
AA	Appropriate Assessment
AEoSI	Adverse Effects on Site Integrity
AoI	Area of Interest
AUV	Autonomous Underwater Vehicle
DDV	Drop Down Video
EDR	Effective Deterrence Range
EPS	European Protected Species
EU	European Union
FCS	Favourable Conservation Status
HF	High Frequency
HRA	Habitats Regulations Appraisal
HVDC	High Voltage Direct Current
IAMMWG	Inter-Agency Marine Mammal Working Group
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
JUV	Jack-Up Vessel
kHz	Kilohertz
LF	Low Frequency
LSE	Likely Significant Effect
MBES	Multi-Beam Echosounder
MD-LOT	Marine Directorate – Licensing Operations Team
MEA	Marine Environmental Appraisal
MHWS	Mean High Water Springs
MMMP	Marine Mammal Mitigation Plan
MMO	Marine Mammal Observer
MU	Management Unit
NCMPA	Nature Conservation Marine Protected Area
NM	Nautical Miles
NMPi	National Marine Plan Interactive
OED	Offshore Exploratory Drilling

TERM	DEFINITION
OWF	Offshore Windfarm
PAM	Passive Acoustic Monitoring
PCPT	Piezocone Penetration Testing
PSA	Particle Size Analysis
PTS	Permanent Threshold Shift
PW	Phocid carnivores in Water
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SBP	Sub-Bottom Profiler
SEL	Sound Exposure Level
SMWWC	Scottish Marine Wildlife Watching Code
SNH	Scottish Natural Heritage
SPA	Special Protection Areas
SPL	Sound Pressure Level
SSEN Transmission	Scottish and Southern Electricity Networks – Transmission
SSS	Side-Scan Sonar
SSSI	Site of Special Scientific Interest
TO	Transmission Owner
UHRS	Ultra-High Resolution Seismic
UK	United Kingdom
USBL	Ultra-Short Baseline
USV	Uncrewed Surface Vehicle
UXO	Unexploded Ordnance
VHF	Very High Frequency

1 INTRODUCTION

1.1 Project Overview

Scottish and Southern Electricity Networks – Transmission (SSEN Transmission), the trading name for Scottish Hydro Electric Transmission plc, hold a licence under the Electricity Act 1989 for the transmission of electricity within the north of Scotland, including Shetland. As the licenced electricity Transmission Owner (TO) for this region, SSEN Transmission has a statutory duty to provide an economic and efficient system for the transmission of energy, and to ensure that all its assets are installed and maintained to enable safe, secure and reliable transmission of power.

The transmission network across the north of Scotland has been identified as an area to facilitate the substantial increase in renewable energy generation and the subsequent increasing demand for improved renewable energy connections. As such, SSEN Transmission are looking to take forward a number of strategic transmission projects which are aimed at expanding the transmission network across northern Scotland.

The Shetland High Voltage Direct Current (HVDC) Link 2 (hereafter referred to as 'the Project') represents one of SSEN Transmission's strategic transmission projects. The Project will facilitate the transmission of electricity between mainland Shetland and mainland Scotland (making landfall along the north Moray coast). To inform the development of the Project, SSEN Transmission are planning to undertake a series of marine surveys to gather geophysical, geotechnical and environmental data. The proposed survey activities will enable SSEN Transmission to:

- Gather data on the condition and profile of the seabed to better inform decisions on Project design (e.g. installation techniques) and cable routing for the Project;
- Gather data on the benthic environment to inform the Marine Environmental Assessment (MEA) that will support the Marine Licence Application for the Project; and
- Inform requirements for future survey works, including the nature and extent of future surveys.

The survey activities for the Project are scheduled to be undertaken within a five-year period, from 23rd February 2026 to 31st December 2030. Further details on the survey activity schedule can be found in Section 2.2.

A European Protected Species (EPS) licence application and basking shark (*Cetorhinus maximus*) derogation licence application were submitted to Marine Directorate – Licensing Operations Team (MD-LOT) on 7th July 2025 (MD-LOT Reference: BS-00011332/EPS-00011333). An EPS and Protected Species Risk Assessment was submitted alongside the licence applications (Xodus document reference: A-101033-S00-A-REPT-001). The licence applications were rejected on 21st October 2025 in line with responses received by NatureScot and the Joint Nature Conservation Committee (JNCC) (JNCC reference: OIA-11069). Following on from advice received in these responses (see Table 1-1), the Area of Interest (AoI) has since been refined (see Section 1.1.1). This EPS and Protected Species Risk Assessment has been updated to reflect the revised AoI, to support of the revised EPS and basking shark derogation licence applications.

Table 1-1 NatureScot and JNCC responses received to the original application (BS-00011332/EPS-00011333) and revisions to this EPS risk assessment

CONSULTEE	ADVICE RECEIVED	REVISIONS
NatureScot	We have reviewed the European Protected Species (EPS) and basking shark application forms as well as the accompanying risk assessment (document reference: A-101033-S00-A-REPT-001) and note that the survey activities are scheduled to be undertaken within a five-year period from 1 January 2026 to 31 December 2030.	Survey durations have been revised to 23rd February 2026 – 31st December 2030.
NatureScot	As per Section 2.2, the survey activities will include approximately 95 days of geophysical survey in 2026 followed by up to 100 days of survey (including geophysical, geotechnical and benthic survey) within each of the remaining four years of the licence period requested. These survey timescales do not take into account equipment calibration or any survey delays as a result of poor weather etc. noting that these all have the potential to increase the overall timescales of survey activity.	The indicative activity schedule has been revised to include a total of 110 days of geophysical survey activities (71 days within Scottish Territorial Waters, and 39 days in Offshore waters). An estimated total of 100 days of survey effort (split between Territorial and Offshore waters) within each of the remaining four years. It should be noted these are indicative durations, with equipment calibration factored into the estimated duration. Survey delays as a result of poor weather, etc. will not increase the overall timescales of the survey activities as survey operations will be suspended in these events with no licensable activity taking place. As such, the duration represents the maximum active survey time required to cover the AoI. As detailed in Section 2, percussive boreholes are no longer proposed for this survey campaign, and the remaining geotechnical and benthic survey activities to not pose a risk of injury or disturbance to EPS. The underwater sound assessment in Section 3.4 confirms that the use of USBL during geotechnical and benthic surveys does not require an EPS licence, therefore the geotechnical and benthic survey campaigns are not licensable, and their durations have been removed from the protected site assessment. These activities will be assessed separately to inform a Marine Licence Exemption Notification.

CONSULTEE	ADVICE RECEIVED	REVISIONS
NatureScot	A very large Area of Interest (AoI) has been identified between Shetland and the Moray coast within which the proposed cable corridor will be located as per Figure 1-1 of the risk assessment. This area includes substantial areas to the north, east and west of Shetland, well away from the proposed landfall locations in the Sullom Voe area, encompassing the north isles and areas of the proposed east of Shetland offshore wind farms. It is noted in Section 1.1.1 that the cable routing and optioneering is currently being undertaken and the actual survey corridor and thus survey area will be a more refined area located within the AoI. The large AoI appears excessive given the likely landfalls, is approximately 100 km in width at its narrowest extent and covers an area of around 42,436 km2. As a result, there is connectivity and potential significant effects to a large number of protected sites and species. This, along with the Applicant's conclusions in Section 4.2 – Assessment of Impacts on Protected Sites, which are not supported by the information provided, means we are unable to undertake a robust assessment of the potential impacts.	The AoI has since been refined and now covers an area of 1,498 km^2, please refer to the revised Figure 1-1. The refinement has involved initial routeing assessments using publicly available data, to identify preferred route options between possible landfall locations in Shetland and mainland Scotland. 1,500 m buffers have been added to the preferred route options (reducing as appropriate in more confined waters) to define the AoI. Prior to the survey activities, further route refinement will be conducted, to define 500 m wide survey corridors, widening to 1,000 m wide from the 15 m depth contour to the landfalls.
NatureScot	In addition, the cumulative / in-combination assessment is insufficient, and we advise that projects that may overlap spatially and temporally are identified with a robust assessment undertaken. Furthermore, we note that many parts of this route have been surveyed multiple times, includes several wind farm sites in the Moray Firth and as such query whether there is a requirement for these areas to be re-surveyed, particularly given the disturbance impacts to EPS.	The cumulative effects assessment has been updated to capture all active EPS licences from the Marine Scotland Information website which may have a spatial and temporal overlap with the Project activities. The refined AoI no longer overlaps with areas surveyed for the offshore wind developments.

CONSULTEE	ADVICE RECEIVED	REVISIONS
JNCC	SNCB guidance (2010) on disturbance of EPS advises that repetition of the same act over a prolonged period can result in disturbance. For example, disturbance is unlikely to result from single, short-term operations operating in an area for 4-6 weeks. The current application states there will be 170 days of surveying in the first year of the license (2026) with a further 100 days each year until the license expiry in 2030. For 2026, 95 of the 170 days will be for the geophysical surveys and 45 for the geotechnical surveys, but it is unclear how many of these days will take place in the inshore and the offshore areas. This is of relevance because different legislation covers each area. No information is presented in the EPS risk assessment to identify spatial or temporal spread within the overall survey area for the remaining years requested in this application. Without this information it is impossible to ascertain whether the proposed activities will result in significant disturbance to cetacean EPS in offshore waters. We request that further information is provided by the applicant to better understand how the geophysical surveys will be temporally and spatially defined over the five-year period. Key information required is how many days will feature within the offshore and inshore areas. We highlight the impact assessment may also require updating as this may influence the disturbance assessment. We also request that further information is provided on the cumulative impacts of the inshore and offshore aspects of these operations, as well as those from other projects and plans as outlined in (Section 3.6).	The indicative activity schedule has been revised to include a total of 110 days of geophysical survey activities (71 days within Scottish Territorial Waters, and 39 days in Offshore waters). An estimated total of 100 days of survey effort (split between Territorial and Offshore waters) within each of the remaining four years. As noted above, durations for geotechnical and benthic surveys have been removed from the protected sites assessment, as these activities do not require an EPS licence. They will be assessed separately to inform a Marine Licence Exemption notification. The cumulative assessments have been updated accordingly.

CONSULTEE	ADVICE RECEIVED	REVISIONS
JNCC	The applicant states it is it is 'very unlikely that the proposed survey activities will coincide with another survey campaign and cause sound sources to overlap. In isolation and cumulatively, the predicted level of disturbance is unlikely to affect the ability of any individual animal to survive or reproduce and will not have significant population-level impacts to any EPS. Therefore, significant cumulative effects are not expected'. We advise insufficient information is provided to support this conclusion. In addition, we recommend the Regulator to seek a commitment that the applicant will communicate with other projects within the area to avoid spatial and temporal overlap to reduce the risk of injury and/or disturbance to EPS.	The cumulative effects assessment has been revised, noting that the refined AoI demonstrates minimal spatial overlap with other developments/activities in the area. SSEN Transmission can commit to internal communication to avoid co-location of the Shetland 2 HVDC Link geophysical surveys with geophysical surveys for other SSEN Transmission projects at the same time. SSEN Transmission will also continue to liaise with other developers in the area, in line with their routine stakeholder engagement activities, however it cannot be guaranteed that other developers can or will provide sufficiently detailed or accurate programmes of their planned activities, to allow the avoidance of spatial and temporal overlap with the Shetland 2 HVDC Link geophysical surveys. It is also noted that as detailed in the EPS risk assessment below, the proposed geophysical surveys do not have the potential to cause injury to EPS (given the proposed mitigation), and the potential disturbance effects are highly localised. As such, given the fact that the geophysical surveys will be transient (constantly moving along the survey corridor), the avoidance of temporal/spatial overlap of the proposed geophysical surveys and activities proposed by other developers is not necessary to maintain the Favourable Conservation Status of any EPS.

CONSULTEE	ADVICE RECEIVED	REVISIONS
JNCC	We advise these measures [marine mammal mitigation] are adequate to reduce the risk of injury and recommend they are secured on any licence issued. Depending on how the survey days will be spread across the five-year period requested, MD-LOT may wish to consider how mitigation is reported. For example, a single report covering all five years at the end of the activity or annual/subsection reports. We highlight we will be updating our mitigation guidance for geophysical surveys in the next couple of months and the applicant should therefore make sure they are complying with the most up to date version of the guidelines. We also request that copies of the post-survey report(s) and associated JNCC spreadsheet are sent to JNCC to support future updates to our mitigation guidelines.	Consideration of the Draft JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (February 2025) has been included within the marine mammal mitigation.
JNCC	Section 1.4.4 Selection Criteria for Protected Sites states that SPAs within 2km of the Area of Interest (AoI) have been selected for assessment. However, there is a risk that this would not scope into the assessment all relevant breeding colony SPAs where the foraging ranges of their qualifying features lead to a potential overlap with the AoI. Our advice is to use the Woodward et al. (2019) mean max plus 1 standard deviation foraging ranges (Table 1) to screen sites into the Likely Significant Effects (LSE) test. Note that we advise that breeding season foraging ranges for razorbill and guillemot are those within Appendix 1 of Woodward et al. (2019) which excludes data from Fair Isle where foraging range may have been unusually high as a result of reduced prey availability during the study year. Therefore, the foraging range to use for razorbill is 73.8km ± 48.4km = 122.2km and for guillemot is 55.5km ± 39.7km = 95.2km.	The guidance to use the Woodward *et al.*, (2019) foraging ranges was developed specifically in the context of assessing ornithological impacts from offshore wind farms. However, for the proposed geophysical surveys, the only impact pathway for ornithological receptors is disturbance by vessel disturbance; resulting from a small number of vessels within a highly localised spatial extent for a short-term duration, which will not result in a substantive change in baseline vessel activity in the AoI. Therefore, unless the vessel is in the immediate vicinity of breeding sites or important foraging areas there is no impact pathway to SPAs. As such, the Applicant maintains that the Woodward *et al.*, (2019) approach would be disproportionate for the screening of SPAs for LSE assessment for the proposed survey activities, and hence, the 2 km distance criteria has continued to be used.
JNCC	Section 4.2.3 SPAs and NCMPAs with Birds and Qualifying Features: The qualifying features identified for the Seas off Foula SPA are not consistent with those in Table 4-1. Notably, the SPA does not have a Seabird Assemblage qualifying feature.	The qualifying features have been amended to include the seabird assemblage qualifying features.

CONSULTEE	ADVICE RECEIVED	REVISIONS
JNCC	As stated, of the 170 survey days planned for 2026, 95 will be for the geophysical surveys and 45 for the geotechnical surveys, but no information is provided on what proportion of these are likely to be within the SPA, whether vessels will remain on station for the entire survey campaign or would transit to and from home port and survey location, whether the surveys involved the use of more than one vessel (and if so, the total number of vessel movements), whether surveys would occur in multiple locations at the same time, and the number of vessel movements during sensitive periods.	As noted, the geophysical survey durations have been amended, and geotechnical and benthic surveys have been removed from the protected sites assessment since they do not require and EPS Licence. These activities will be separately assessed to inform the Marine Licence Exemption notification.
JNCC	We also request that further information is provided on the cumulative and in-combination impacts of operations, as well as those from other projects and plans as outlined in (Section 3.6). We also note that Section 3.6 does not include all offshore wind proposals in the ScotWind Round that are within or adjacent to the AoI. All relevant projects should be included in an in-combination assessment to ensure its robustness.	The cumulative effects assessment has been updated to include a revised list of offshore wind developments in proximity to the Project, noting that the refined AoI demonstrates reduced potential interactions with other developments/activities in the area.
JNCC	The applicant states 'The Area overlaps with several protected sites. However, due to the temporary and localised nature of the survey activities, long-term impacts to the qualifying interests of these protected sites will not be significant. A number of mitigation strategies will also be followed to further reduce any potential impacts (see Section 5). Therefore, there will be no AEoSI for any European site and the survey activities will not pose a risk of affecting, other than insignificantly, the achievement of the conservation objectives of any NCMPA.' We recommend the Competent Authority seek clarification on the points above to ascertain the potential for impact on this SPA. We welcome the proposed mitigation measures (Section 5.2). However, there is currently insufficient information provided to allow the Competent Authority to rule out an Adverse Effects on Site Integrity	The assessment for the SPA has been updated to include the revised survey duration and vessel information. The conclusion remains that given the limited spatial and temporal extent of the survey activities, with consideration of the mitigation measures, it is concluded that there will be no AEoSI or adverse effects to the conservation objectives of the identified SPAs screened into the assessment.

CONSULTEE	ADVICE RECEIVED	REVISIONS
JNCC	Table 3-7 (page 32) suggests that injury may occur from hammering associated with percussive boreholes. However, Section 5 of the EPS Risk Assessment states the proposed mitigation will only apply to UHRS and Sub-bottom Profiler (SBP) survey operations. We highlight hammering for percussive boreholes has the potential to result in injury to cetacean EPS but note if used, it will be in the nearshore area. We therefore defer to NatureScot regarding this activity.	Percussive boreholes have been removed from the survey equipment.

1.1.1 Area of Interest

A refined AoI has been identified between mainland Shetland and the Moray coast, within which the Project's proposed cable corridor is proposed to be located, as illustrated in Figure 1-1. The AoI has been developed following initial cable routeing and optioneering, by applying a 1,500 m buffer (3,000 m wide corridor width) to the centrelines of the preferred route options between the potential Shetland and mainland Scotland landfall locations. In confined waters, the width of the AoI has been reduced accordingly. The proposed marine surveys will include all three mainland Scotland landfall options (including associated routeing), and up to two of the potential Shetland landfall locations (including associated routeing) on either the Western route or the Northern route into Yell Sound. This is to ensure final route and site selection is informed by accurate survey data.

SSEN Transmission plan to undertake the proposed marine surveys within the identified AoI for the Project. The AoI is approximately 1,498 km^2 and is located within both Scottish Territorial waters (<12 Nautical Miles (NM) from Mean High Water Springs (MHWS)) and within UK Offshore Waters (>12 NM from MHWS), as show in Figure 1-1.

It should be noted that cable route engineering and refinement is currently being undertaken, and the actual survey corridors will be approximately 500 m wide in general, increasing to 1,000 m wide between the 15 m depth contours and the landfalls. As such, the actual area covered by the survey activities will be significantly reduced.

The coordinates for the Project AoI are provided in Appendix A.

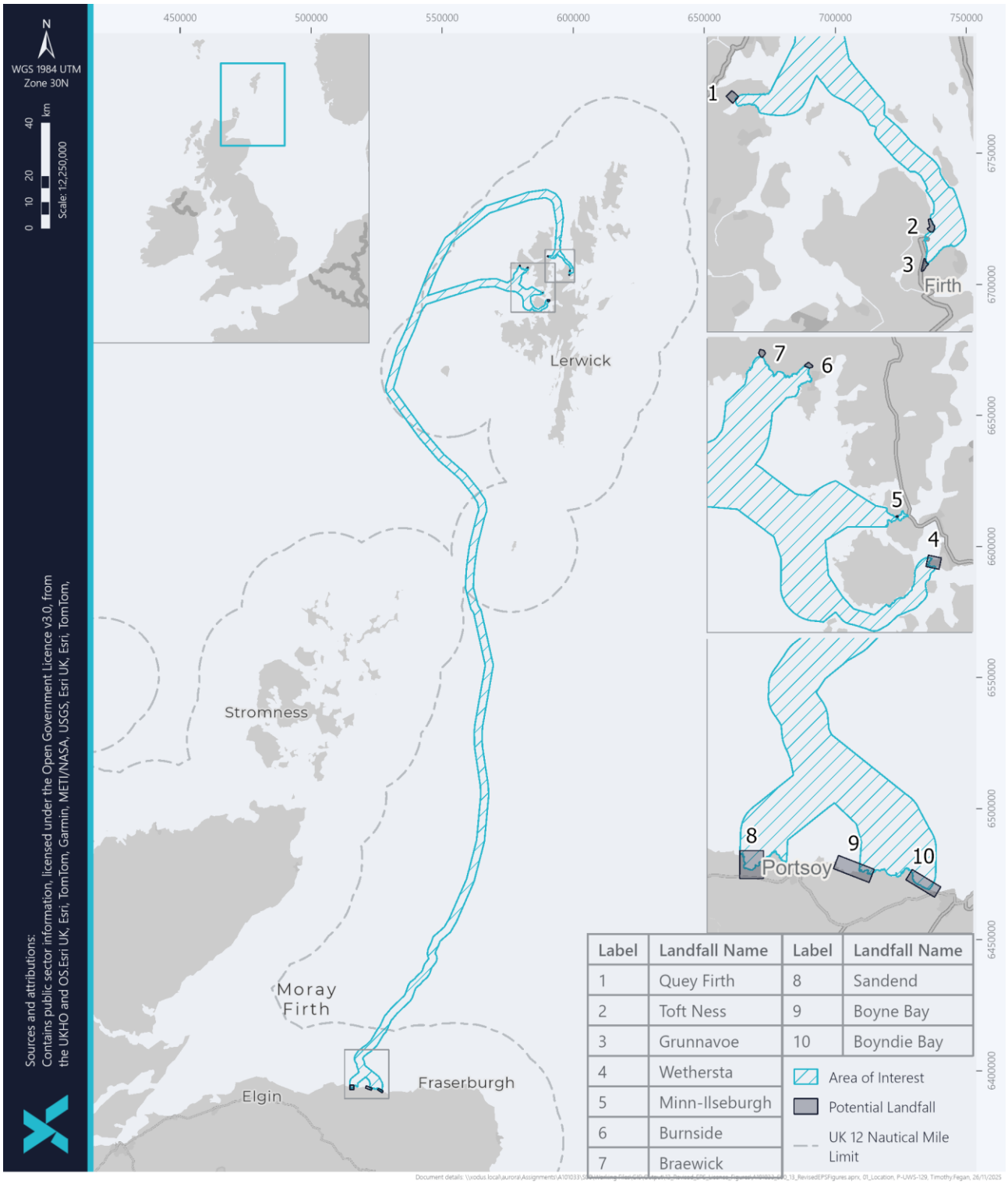

Figure 1-1 Refined AoI

1.2 Report Purpose

Ahead of the commencement of any survey activities, all relevant consent and licences need to be in place. This document provides the necessary information to support the following:

1. An assessment of potential impacts on cetaceans and otters, and determination of the need for an EPS Licence under the Conservation (natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations). Where an EPS licence is required, this document also provides the EPS Risk Assessment to support the application;
2. An assessment of potential impacts on basking sharks, and determination of whether a derogation licence will be required under the Wildlife and Countryside Act 1981 (as amended);
3. An assessment of the potential for Likely Significant Effects (LSE) on protected sites as required by the Habitats Regulations;
4. An assessment of whether the proposed activities are capable of affecting (other than insignificantly) Nature Conservation Marine Protected Areas (NCMPAs), as required under the Marine (Scotland) Act 2010 and the Marine and Coastal Accessed Act 2009; and
5. An assessment of the potential to harass (intentionally or recklessly) any seals at designated seal haul-outs, as defined by Section 117 of the Marine (Scotland) Act 2010 and the Protection of Seals (Designation of Haul-Out Sites) (Scotland) Amendment Order 2017.

1.3 Protected Species Overview

1.3.1 European Protected Species

All cetacean species (i.e. whale, dolphin, and porpoise) that occur within United Kingdom (UK) waters and the Eurasian otter (*Lutra lutra*) are listed under Annex IV of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna) as EPS. As per Article 12 of the Directive, all cetaceans and otters are species of community interest in need of strict protection. Harbour porpoise (*Phocoena phocoena*) and bottlenose dolphin (*Tursiops truncates*) are also listed as individual EPS and fall under Annex II of the Habitats Directive, which allows for the designation of Species Areas of Conservation (SACs) for those species.

While the UK is no longer a part of the European Union (EU), in Scotland the Habitats Directive is transposed into law under The Conservation (Natural Habitats, &C.) Regulations 1994 (as amended) within Scottish Territorial Waters, and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in Offshore Waters (collectively referred to as the Habitats Regulations). Following the UK's withdrawal from the EU, these regulations mean that strict protections for EPS remain, as per the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. An EPS Licence is required where any activity may result in an offence under the Habitats Regulations, which in the context of the marine survey, pertains to cetaceans and otters.

Part III of the Habitats Regulations defines what is considered an offence, in terms of human interactions with EPS. However, the definition of an offence under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) differs slightly from that prescribed by the Conservation of Habitats and Species Regulations 2017 (as amended), as summarised in Table 1-2. The key difference is Regulation 39(2) within the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (as highlighted in bold in Table 1-2), which makes disturbance of *any* cetacean an offence in Scottish Territorial Waters. There is no equivalent regulation in the offshore legislation.

An EPS Licence will therefore be required for the following:

1. Any activity that might result in injury to any cetacean or otter EPS;
2. Any activity which results in disturbance to any individual cetacean within Scottish Territorial Waters or any population of cetaceans in Offshore Waters; and/or
3. Any activity that might disturb any population of otters, as stated in Regulation 39 (1)(v) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and Regulation 45 (2)(b) of the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended).

Table 1-2 Definitions of Disturbance Offenses Against EPS in Scottish Territorial and UK Offshore Waters

AREA	SCOTTISH TERRITORIAL WATERS	UK OFFSHORE WATERS
Applicability	Within 12 NM Limit	Outwith 12 NM Limit
Relevant Legislation	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)	The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)
Definition of Relevant Offences	Regulation 39: 1. It is an offence– (a) deliberately or recklessly to capture, injure or kill a wild animal of a European protected species; (b) deliberately or recklessly– (i) to harass a wild animal or group of wild animals of a European protected species; (ii) to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection; (iii) to disturb such an animal while it is rearing or otherwise caring for its young; (iv) to obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place; (v) to disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; or (vi) to disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; (c) deliberately or recklessly to take or destroy the eggs of such an animal; or (d) to damage or destroy a breeding site or resting place of such an animal. 2. Subject to the provisions of this Part, it is an offence to deliberately or recklessly disturb any dolphin, porpoise or whale (cetacean).	Regulation 45: 1. Subject to regulations 46 and 55, a person who— (a) deliberately captures, injures, or kills any wild animal of a European protected species, (b) deliberately disturbs wild animals of any such species, (c) deliberately takes or destroys the eggs of such an animal, or (d) damages or destroys, or does anything to cause the deterioration of, a breeding site or resting place of such an animal, is guilty of an offence. 2. For the purposes of paragraph (1)(b), disturbance of animals includes, in particular, any disturbance which is likely— (a) to impair their ability— (i) to survive, to breed or reproduce, or to rear or nurture their young; or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

Determining the need for an EPS Licence

The assessments presented within this report will be used to determine whether, when considering the implementation of appropriate mitigation, there is the potential for the Project marine survey to injure or disturb cetaceans or otters. An EPS Licence may be required where the potential for disturbance remains, and will be determined based on outcomes of the EPS Risk Assessment.

If an EPS Licence is required, MD-LOT's consideration of whether an EPS Licence can be granted will comprise the following three tests:

1. To ascertain whether the licence is granted for one of the purposes specified in the Habitats Regulations;
2. To ascertain whether there are no satisfactory alternatives to the activity proposed (that would avoid the risk of offence); and
3. That the licensing of the activity will not be detrimental to the maintenance of the population of the species concerned at a Favourable Conservation Status (FCS).

Eurasian otter

The Eurasian otter is the only native species of otter within the UK and is fully protected as an EPS and also under Section 9 and 11 of the Wildlife and Countryside Act 1981 (as amended). The presence of an otter as an EPS is a material consideration if proposals are likely to result in the disturbance or harm to the species.

The coastal regions of Shetland offer high-quality habitats for otters. Otters are widely distributed across the islands, particularly in tidal sounds, characterised by low-lying peaty coastlines which provide suitable habitat for otter holts and easy access to fresh water and algal beds for foraging (Shucksmith, 2017). As such, otters may be present within the nearshore areas of the AoI during the survey activities, for example in the Yell Sound which is known to contain some of the highest densities of otters in Shetland (Shucksmith, 2017).

While otters could be disturbed by the presence of vessels, they are not especially sensitive to the sound emissions associated with the surveys. Notably, the surveys will be conducted over a very limited duration within nearshore areas close to coastal otter habitats. With the application of appropriate mitigation measures, as detailed in Section 5, the risk of disturbance to otters is considered to be extremely limited and will not constitute an offence under the Habitat Regulations. Therefore, an EPS Licence for otters will not be required. This species will not be assessed further in this report, except within the Protected Sites Impact Assessment (Section 4), should otters be identified as a qualifying feature of any European site under consideration.

1.3.2 Basking sharks

Basking sharks are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended), which prohibits the killing, injuring, or taking of any wild animals listed in Schedule 5 of the Act. This protection is further reinforced by the Nature Conservation (Scotland) Act 2004, which amends the Wildlife and Countryside Act 1981 Act to include offences involving 'reckless' actions. Under this legislation, it is an offence to intentionally or recklessly disturb or harass basking sharks

An assessment of potential impacts on basking sharks, including consideration of whether a derogation licence is required under the Wildlife and Countryside Act 1981 (as amended), is provided in Section 3.5.

1.4 Protected Sites Overview

1.4.1 European Sites

The European Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) have been transposed into Scottish law through the Habitats Regulations. These directives aim to conserve biodiversity by requiring the maintenance or restoration of natural habitats and wild species at FCS, with strong legal protections for habitats and species of European importance.

Following the UK's departure from the European Union, European sites, including SACs and Special Protection Areas (SPAs), in Scotland retain the same level of protection as when they were part of the EU's Natura 2000 network. However, these sites are now part of the UK Site Network, which continues to contribute to domestic and international biodiversity commitments.

Under the Habitats Regulations, Competent Authorities must assess whether any proposed plan or project has the potential to result in an LSE on the integrity of a European site. This is carried out through the Habitats Regulations Appraisal (HRA) process. If a proposal is likely to have an LSE, it must undergo an Appropriate Assessment (AA) to determine whether it would adversely affect site integrity. Consent can only be granted if no adverse effects are identified, unless there are no alternatives and the project is justified by Imperative Reasons of Overriding Public Interest (IROPI).

If the survey activities are found to have the potential for LSE on a European site, this report will provide the necessary information to support the HRA process.

1.4.2 Marine Protected Areas

Under Section 82 of the Marine (Scotland) Act 2010, MD-LOT is required to consider whether a licensable activity is capable of affecting (other than insignificantly) a protected feature within an NCMPA, or any ecological or geomorphological process upon which the conservation of any protected feature within the NCMPA is dependent. If MD-LOT determine that there is or may be significant risk to the achievement of the Conservation Objectives of an NCMPA then they must notify the relevant conservation bodies (e.g., NatureScot and the JNCC).

It is an offence to intentionally or recklessly kill, remove or damage, or destroy any protected feature of an NCMPA. MD-LOT must be sure that consenting decisions do not cause a significant risk to the Conservation Objectives of any NCMPA. If the survey activities are found to have a potential to affect (other than insignificantly) the achievement of the Conservation Objectives of an NCMPA, this report will provide sufficient detail to allow MD-LOT to ascertain the potential effects on the identified NCMPAs.

1.4.3 Designated Seal Haul-Outs

Seal haul-outs are coastal habitats that seals use to breed, moult and rest. There are 194 seal haul-out sites throughout Scotland that have been designated under the Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014, which was amended with additional sites in 2017. Under Section 117 of the Marine (Scotland) Act 2010, seals hauled out within these haul-out sites are protected and their designation strengthens the protection of seals when they are at their most vulnerable on land. Section 117 of the Marine (Scotland) Act 2010 protects seals from intentional or reckless harassment whilst seals occupy these important coastal haul-out sites.

1.4.4 Selection Criteria for Protected Sites

The potential for the survey activities to impact protected sites (including designated seal haul-outs) needs to be considered. The following criteria have been used to select those protected sites where potential impacts need to be assessed:

- SACs and NCMPAs (including proposed and candidate sites) with cetaceans as qualifying features within 50 km of the AoI;
- SACs (including proposed and candidate sites) with harbour seal (*Phoca Vitulina*) features within 50 km of the proposed AoI and breeding grey seal (*Halichoerus grypus*) within 20 km of the AoI;
- Designated seal haul-outs or seal breeding sites within 500 m of proposed landfall areas within the AoI;
- SPAs and NCMPAs (including proposed and candidate sites) with birds as qualifying features within 2 km of the AoI;
- SACs and NCMPAs (including proposed and candidate sites) with benthic interests which are within the AoI; and
- SACs and NCMPAs (including proposed and candidate sites) with otter features within 500 m of the AoI.

The guidance to use the Woodward *et al.*, (2019) foraging ranges was developed specifically in the context of assessing ornithological impacts from offshore wind farms. However, for the proposed geophysical surveys, the only impact pathway for ornithological receptors is disturbance by vessel disturbance; resulting from a small number of vessels within a highly localised spatial extent for a short-term duration, which will not result in a substantive change in baseline vessel activity in the AoI. Therefore, unless the vessel is in the immediate vicinity of breeding sites or important foraging areas there is no impact pathway to SPAs. As such, the Applicant maintains that the Woodward *et al.*, (2019) approach would be disproportionate for the screening of SPAs for LSE assessment for the proposed survey activities, and hence, the 2 km distance criteria has continued to be used.

2 DESCRIPTION OF PROJECT ACTIVITIES

2.1 Overview

The proposed geophysical, benthic, and geotechnical surveys are required to determine seabed conditions and to characterise the benthic environment, including identifying protected features or habitats.

2.1.1 Testing and Calibration of Survey Equipment

Prior to the commencement of any survey works, the survey equipment and sensors will need to be tested and calibrated. This testing and calibration may be required for all survey equipment (as detailed in Table 2-1). It is anticipated that the testing and calibration of survey equipment will take approximately 12 hours.

The exact location of the testing and calibration sites is unknown at this stage, however where possible this activity will be carried out within the AoI (Figure 1-1). It is noted that specific bathymetric conditions and features are required to facilitate the successful testing and calibration of survey equipment. Should these conditions not be available within the AoI, an alternative location will be utilised.

Since the vessel(s), equipment, and activities required for testing and calibration will be the same as those used during the survey activities, the potential impacts on protected species and sites will be analogous to those from the main survey phase. As such, testing and calibration of survey equipment has not been specifically assessed as part of this

report. All mitigation measures applied as part of the main survey phase (Section 5) will be applied to the testing and calibration of survey equipment.

2.1.2 Survey Activities

Survey activities will typically be carried out using survey vessels. The selection and deployment of survey vessels will be made prior to the commencement of any survey activities and will be informed by a number of factors, including environmental considerations, weather, sea state, survey requirements and water depth. Smaller supporting vessels may also be used (their presence will be influenced by the nature of survey works being undertaken). Table 2-1 below provides details on the types of activities that are proposed for the surveys. Further detail on survey equipment is provided in Section 2.1.3.

Table 2-1 Summary of Survey Activities

SURVEY ACTIVITIES	
Vessels and vehicles	Survey Vessel(s)
	Remotely Operated Vehicle (ROV)
	Uncrewed Surface Vehicle (USV)
	Autonomous Underwater Vehicle (AUV)
Geophysical survey	Ultra-Short Baseline (USBL) positioning system
	Multi-Beam Echosounder (MBES)
	Sidescan Sonar (SSS)
	Sub-Bottom Profilers (SBP)
	Ultra-High-Resolution Seismic (UHRS) system (boomer/sparker)
	Magnetometer
	Cable tracking system (e.g. TSS 350/440)
Benthic survey	ROV survey/inspection
	Drop Down Video (DDV)/photography
	Benthic sediment sampling
Geotechnical survey	Vibrocoring
	Piezo Cone Penetration Testin (PCPT)

2.1.3 Survey Equipment

A range of different survey equipment are proposed for the survey activities (as identified in Table 2-1 above). Detailed description of the survey equipment to be used is provided in Table 2-2 below.

Table 2-2 Details of the Equipment to be Employed for the Survey Activities

SYSTEM/SURVEY EQUIPMENT	DESCRIPTION
Geophysical Survey	
Ultra-Short Baseline (USBL)	USBL systems are used to determine the position of subsea survey items, including ROVs, towed devices, grab samplers, etc. This involves the emission of sound from a vessel-mounted transducer to a subsea transponder, thereby introducing sound into the marine environment. A USBL system consists of a transducer, which is mounted on the vessel and a transponder attached to the ROV. The transducer transmits acoustics through the water and the transponder sends a response which is detected by the transducer. The USBL calculates the bearing and time taken for the transmissions to be completed and thus the position of the subsea unit / sampling equipment is determined. These systems can either be used continuously or intermittently through the operation they are supporting.
Multi-Beam Echosounder (MBES)	MBES is used to obtain detailed 3-dimensional (3D) maps of the seafloor which show water depths. They measure water depth by recording the two-way travel time of a high frequency pulse emitted by a transducer. The beams produce a fanned arc composed of individual beams (also known as a swathe). MBES, typically, carry out 200 or more simultaneous measurements. With regards to this Project, the MBES specifications will be high resolution, involving a max ping space of 25 cm or 9 pings per m^2 with towed set up.
Sidescan Sonar (SSS)	SSS is used to generate an accurate image of the seabed, which may include 3D imagery. An acoustic beam is used to obtain an accurate image of a narrow area of seabed to either side of the instrument by measuring the amplitude of back-scattered return signals. The instrument can either be towed behind a ship at a specified depth or mounted on to a ROV. The frequencies used by SSS are generally very high and outside of the main hearing range of all marine species (NOAA, 2018). The higher frequency systems provide higher resolution but shorter-range measurements.
Sub-Bottom Profilers (SBP)	SBP systems are used to identify and characterise layers of sediment under the seafloor. A transducer emits a sound pulse vertically downwards towards the seafloor, and a receiver records the return of the pulse once it has been reflected off the seafloor. There are numerous SBP technologies which may be deployed during survey operations, including; pingers and chirpers. These devices can operate across a range of frequencies depending on the purpose of the survey. Higher frequencies of operation provide the highest resolution but are limited in amount of penetration below the sea floor. The high frequency profilers are particularly useful for delineating shallow features such as faults, gas accumulations and relict channels. Lower frequencies yield more penetration but provide less resolution. Lower frequency systems are more general-purpose tools that provide a good compromise between penetration capacity and resolution.

SYSTEM/SURVEY EQUIPMENT	DESCRIPTION
Ultra-High-Resolution Seismic (UHRS) system	A UHRS system is optimised to achieve a sub-bed penetration depth, focusing on the depth range of 10–1,000 m below seafloor. This technology requires a controlled seismic source of energy connected by high voltage cable to a sound source that transfers the energy through the water to penetrate the seabed. The energy reflected back from the different sediment layers below the seabed is received by hydrophones on the sea surface, recorded and processed by a data acquisition system aboard a vessel, so that visual profile of the seabed can be created. There are numerous UHRS technologies which may be deployed during survey operations, including both boomers, and sparkers. A seismic sparker works by discharging an electrical pulse between electrodes and a grounding point in seawater. This discharge creates an acoustic pulse, and the reflected signal is received by a hydrophone deployed at a set distance from the source.
Magnetometer	Magnetometer surveys are used to detect any ferrous metal objects on the seabed, such as wrecks, Unexploded Ordnance (UXO), or any other obstructions. Marine magnetometers come in two types: surface-towed and near-bottom. Both are towed a sufficient distance (at least two ship lengths) away from the vessel to allow them to collect data without it being influenced by the ship's magnetic properties. Surface towed magnetometers allow for a wider range of detection at the price of precision accuracy that is afforded by the near-bottom magnetometers. These surveys use equipment to record spatial variation in the Earth's magnetic field. This equipment does not generate underwater noise as a part of its normal operations and is therefore not considered to pose any risk of injury or disturbance to cetaceans.
Cable tracking system (e.g., TSS 350/440)	Cable tracker survey systems provide positional data on surface laid or buried pipes and cables. It is used to verify the location and burial status of cables and can provide precise details of fault locations. This equipment does not generate underwater noise and is therefore not considered to pose any risk of injury or disturbance to cetaceans.
Benthic Survey	
Remotely Operated Vehicle (ROV) survey/inspection	An ROV mounted camera will be utilised to acquire imagery of the seabed. This survey equipment does not interact with the seabed, or result in underwater noise emissions and as such does not require any further consideration by this assessment. USBL may be used to monitor the position of the ROV.
Drop Down Video (DDV)/photography	Ground-truthing of acoustic data will be undertaken using DDV/photography (drop frame and/or ROV) and grab sampling techniques (see below). This survey technique does not interact with the seabed. It is required to provide detail on epifaunal species (animals living on the surface of the substrate), habitats and geological features. Drop down cameras do not generate potentially significant levels of noise. Therefore, this technology does not require any further consideration with respect to potential injury or disturbance of protected species. USBL may be used to monitor the position of the camera unit.

SYSTEM/SURVEY EQUIPMENT	DESCRIPTION
Benthic sediment sampling	Grab samples will be taken of the seabed to provide detail on the sediment itself and infauna (animals living within the substrate) which cannot be provided by the use of video and photography (see above). Grab samples will not be collected on hard substrates or at locations with sensitive habitats (e.g. Maerl). Therefore, grab sampling will be preceded with video/camera drops. Grabs will be collected at selected video/photo sites on sedimentary substrate unless they support sensitive habitats; data collected will therefore be complementary and allow biotope classification to include consideration of infaunal components. A sediment sub-sample will also be retained from the grab for Particle Size Analysis (PSA). The benthic sediment sampling equipment does not generate potentially significant levels of noise. Therefore, this technology does not require any further consideration with respect to potential injury or disturbance of protected species. USBL may be used to monitor the position of the sampler.
Geotechnical Survey	
Vibrocore and Piezocone Penetration testing (PCPT)	Geotechnical sampling may also be undertaken as part of the marine survey. This may include both vibrocoring operations and PCPT. Vibrocoring operations will be undertaken using a high power vibrocorer which will be deployed from the survey vessel. The PCPT will be carried out from the survey vessel using piezocones that will be pushed into the seabed to collect samples in order to allow determination of the geotechnical engineering properties of the sediment and delineation of the seabed stratigraphy. The vibrocoring equipment, including PCPT, does not generate significant levels of noise. Therefore, this technology does not require any further consideration with respect to possible injury or disturbance to protected species and sites. Note that USBL beacons are often mounted on this equipment to determine position.

2.2 Activity Schedule

The survey is proposed to be undertaken between 23rd February 2026 and 31st December 2030, with a total survey window of 5 years. However, the proposed survey activities will be undertaken in distinct survey campaigns, with up to an indicative total of 110 days of geophysical survey activity undertaken during the first year (i.e., 2026), including 71 days within Scottish Territorial Waters (within 12 NM), and 39 days in Scottish Offshore Waters (outwith 12 NM). Up to 100 days per year of geophysical survey activities may be undertaken during each of the remaining four years. The indicative total duration of geophysical survey activities covered by this application is therefore 510 days over the five-year period.

It should be noted these are indicative durations, with equipment calibration factored into the estimated duration. Survey delays as a result of poor weather, etc. will not increase the overall timescales of the survey activities as survey operations will be suspended in these events with no licensable activity taking place. As such, the duration represents the maximum active survey time required to cover the AoI.

Since the proposed geotechnical and benthic survey activities do not generate underwater sound emissions which could result in an EPS injury or disturbance offence according to the Habitats Regulations (noting that USBL is not

licensable as detailed in Section 3.4), they do not require an EPS licence, and hence the durations of geotechnical and benthic survey activities are not considered by this assessment. A separate assessment of these activities will be conducted to inform the Marine Licence Exemption notifications.

3 EPS AND BASKING SHARK IMPACT ASSESSMENT

The purpose of this EPS Risk Assessment is to determine whether an EPS licence is required for the Project survey activities by identifying whether there is the potential for injury and/or disturbance to EPS. This section of the document considers the potential impacts on EPS, regardless of their inclusion as a qualifying feature of a protected site.

While pinnipeds (seals) are not classified as EPS, this section also includes an assessment of the potential effects of underwater sound on these animals, supported by sound modelling, to inform the Protected Sites Impact Assessment presented in Section 4.

Underwater sound emissions associated with geophysical survey operations are the primary source of potential injury and/or disturbance arising from the survey activities. It is acknowledged that underwater sound emitted by survey vessels and the physical presence of survey vessels during survey operations also have the potential to result in disturbance.

An overview of proposed survey activities and their potential impacts to EPS and pinnipeds is provided in Table 3-1 below. While some proposed survey techniques and activities may introduce underwater sound into the marine environment, other activities do not operate within a frequency range which has the potential to result in injury and/or disturbance to EPS and pinnipeds. Therefore, these activities have been screened out for further assessment as part of the assessment, as indicated in Table 3-1.

An assessment is also presented to determine the requirement for a Basking Shark Derogation licence in Section 3.5.

Table 3-1 Overview of Potential Impacts of Marine Survey Equipment on EPS and Pinnipeds within the Vicinity of the AoI

ACTIVITY/ EQUIPMENT	EXAMPLE EQUIPMENT	POTENTIAL IMPACTS	FREQUENCY RANGE (kHz)	INDICATIVE SPL[1] (dB re 1µPa)	FURTHER INFORMATION REQUIRED FOR EPS RISK ASSESSMENT?
Vessels and vehicles					
Survey vessels (including JUV)	Various	Propellers, engines, and propulsion activities form the primary sound sources of survey vessels. Vessel sound is generally continuous and comes in both narrowband and broadband emissions. Potential impacts on EPS and other protected species depend on the duration of the survey activities, location of the survey routes and species of cetacean potentially present in the area. Increased vessel activity additionally has the potential to cause injury from collisions. The risk of collision with an animal is influenced by the dimensions of the vessel and its speed.	Acoustic energy from vessels is strongest at frequencies <1 kHz	< 50 m length vessel = 160 – 175 Root Mean Square (RMS) > 50 m length vessel = 165 – 185 RMS	No – The source levels associated with vessels are likely to be too low to result in injury, and the presence of a small number of survey vessels in the region does not constitute a material change from baseline conditions. It is acknowledged that vessels pose a collision risk to cetaceans and other protected species. While this does not constitute a change from baseline, all vessels will adhere to The Scottish Marine Wildlife Watching Code (SMWWC) (Scottish Natural Heritage (SNH), 2017), as detailed in Section 5.
USV	Various	USVs are controlled and maneuvered using batteries which power propellers and thrusters. Sound generated by USVs is similar to other vessels (i.e., continuous and broadband) but reduced in power due to their smaller size.			
ROV and AUV	Various	Potential impacts to EPS and other marine mammals include disturbance from sound emissions associated with movements underwater. However, these are anticipated to be limited in scale, given the small size of the submerged vehicles. Collision risk is considered an unlikely impact, given the high level of manoeuvrability and slow movement associated with ROVs.	N/A	N/A	No – The predominant sound source during such activities is the USBL, and other geophysical survey sensors deployed on the vehicle, which is expected to mask any sound generated by the vehicle itself. Sound generated by geophysical survey devices has been considered separately (see below).
Geophysical survey					
USBL	HIPAP 501 Ranger USBL	USBL systems involve the emission of an impulsive underwater sound into the marine environment from a hull-mounted transducer to a subsea transponder. The potential impacts associated with this sound on EPS and other protected species depends upon the presence, abundance, distribution and sensitivity of the species, and the duration of USBL operations.	19.5 – 33.5	170 – 207	Yes - While the SPL and frequencies at which USBL equipment operates are not of a level where injury to cetaceans and pinnipeds is anticipated, there is the potential for a disturbance effects to result.
MBES	R2Sonic 2024 Reson 7125	MBES generates high frequency sound pulses which produce an impulsive underwater sound. Depending on the frequency of the pulses, location and duration of the operations, and the species present, there is the potential for impacts on cetaceans.	> 200	180 – 240	No – The proposed MBES systems will operate at a frequency above 200 kHz. This is above the hearing threshold for all cetaceans and pinnipeds which are likely to be present within the AoI (detailed in Table 3-3). Therefore, there is no potential for injury or disturbance as a result of MBES operations (NOAA, 2018).
SSS	Edge Tech 4200/4205	SSS equipment produces an impulsive sound from high frequency pulses which are used to create seabed imagery. Potential impacts to EPS and other protected species depend upon the frequency, location and duration of the operations.	> 200	190 - 230	No – The use of SSS equipment proposed for the Project will operate at a frequency above 200 kHz. This is above the hearing threshold for all cetaceans and EPS which are likely to be present within the AoI (detailed in Table 3-3). Therefore, there is no potential for injury or disturbance as a result of MBES operations (NOAA, 2018).

[1] *Sound Pressure Levels (SPLs) are presented as SPL_{PEAK} unless otherwise stated.*

ACTIVITY/ EQUIPMENT	EXAMPLE EQUIPMENT	POTENTIAL IMPACTS	FREQUENCY RANGE (kHz)	INDICATIVE SPL[1] (dB re 1µPa)	FURTHER INFORMATION REQUIRED FOR EPS RISK ASSESSMENT?
SBP	EdgeTech 2000 series (Chirp) Innomar SBP 2000 series (Pinger)	SBP involves the emission of sound pulses (impulsive sound) vertically through the seabed to characterise the layers of sediment that make up the seabed. The potential impacts of this sound depend on the type of profiler technology used, as well as the abundance, distribution and sensitivity of the species present, and the duration of the SBP operations. Throughout the survey campaign there are a number of SBP technologies which may be deployed, including both chirpers and pingers.	0.5 – 12 (chirp) 4 (pinger) 100 (pinger)	200 – 230 (chirp) 200 – 235 (both pingers)	Yes – Although SPL emitted by this equipment is below the threshold that is likely to result in a realistic risk of injury to cetaceans and pinnipeds, this equipment may be a source of disturbance.
UHRS system	The Dura-Spark The Dura-Spark UHD 240/400	An UHRS system is optimised to achieve a sub-bed penetration depth focusing on the depth range of 10-1,000 m below the seafloor. This technology requires a controlled seismic source of energy connected by high voltage cable to a sound source (boomer or sparker) that transfers the energy through the water to penetrate the seabed. The energy reflected back from the solid seabed layers is received by hydrophones on the sea surface, recorded and processed by a data acquisition system aboard a vessel, so that visual profile of the seabed can be created.	0.1 – 6	216 – 250	Yes – The frequency of sound emissions associated with UHRS systems are within the hearing range of cetaceans and pinnipeds, therefore this equipment may pose a risk of injury and/or disturbance.

3.1 Cetacean Baseline

There are around 20 recorded cetacean species in Scottish waters, six of which are considered common within the AoI (NatureScot, 2025; Gilles *et al.*, 2023), these are:

- Harbour porpoise;
- Minke whale (*Balaenoptera acutorostrata*);
- Bottlenose dolphin;
- White-beaked dolphin (*Lagenorhynchus albirostris*);
- Risso's dolphin (*Grampus griseus*); and
- Killer whale (Orcinus *orca*).

Shucksmith (2017) notes that harbour porpoise, minke whale, white-beaked dolphin, Risso's dolphin and killer whale are considered to be year-round visitors to Shetland. Bottlenose dolphin are likely to be less common in the waters surrounding the Shetland Islands and more common on the approach to the Moray Firth.

The six species considered common within the AoI summarised in more detail below.

3.1.1 Harbour porpoise

The harbour porpoise is widespread throughout the cold and temperate seas of Europe, including the North Sea and the waters associated with the Shetland Islands (Scottish Wildlife Trust, 2025). Harbour porpoise are frequently sighted in shallow bays, estuaries and tidal channels (<200 m in depth), with most animal sightings occurring within 10 km of the coast (Whale and Dolphin Conservation, 2025). Harbour porpoise are regularly spotted in Shetland waters in small groups and occasionally in large aggregations that are not commonly seen in other areas of the UK (Shetland Community Wildlife Group, 2021). The AoI lies wholly within the North Sea Management Unit (MU) for harbour porpoise, with an abundance of approximately 346,601 animals (Inter-Agency Marine Mammal Working Group (IAMMWG), 2022). Within the relevant Small Cetaceans in European Atlantic Waters and the North Sea (SCANS) IV survey blocks for the AoI the density of harbour porpoise ranges from 0.28 animals/km^2 in CS-K to 0.52 animals/km^2 in NS-E (Gilles *et al.*, 2023). The AoI overlaps with SCANS-IV survey blocks CS-K and NS-E in both inshore (i.e. within 12 NM) and offshore (outwith 12 NM) waters. Habitat-based density models developed by Gilles *et al.*, (2025) using sightings data from the SCANS-IV surveys predict that the highest density of harbour porpoise occurs in the offshore waters between the Shetland Islands and the Moray Firth. The predicted density of harbour porpoise in the nearshore waters around the Shetland Islands and Moray Firth is predicted to be comparatively low throughout the AoI (Gilles *et al.*, 2025).

Across the first four SCANS surveys between 1994 and 2022, a southward shift in the summer distribution of harbour porpoise has been identified, from the northwest North Sea in 1994 to the southwest of the North Sea in 2005, 2016 and 2022 (Gilles *et al.*, 2023). Therefore, the recent survey data indicates that the waters around Shetland are no longer a key area for this species.

3.1.2 Minke whale

Minke whale are the smallest and most frequently sighted species of baleen whale within Scottish waters (Nature in Shetland, 2025). While some animals are seen year-round, they are most commonly sighted between May and October, with some individuals known to return to Scottish waters year after year (Scotlink, 2025). Minke whales mainly feed in shallower waters over the continental shelf, however they are also commonly seen in the strong currents around headlands and small islands where they have been observed close to land and entering estuaries,

bays and inlets (NatureScot, 2025). The AoI lies wholly within the Celtic and Greater North Seas MU for minke whale, with an abundance of approximately 20,118 animals (IAMMWG, 2022). The density of minke whale within SCANS-IV survey blocks CS-K and NS-E is approximately 0.01 animals/km^2 (Gilles *et al.*, 2023). Habitat-based density models AoI predict that the density of minke whale remains low throughout the AoI (Gilles *et al.*, 2025).

3.1.3 Bottlenose dolphin

Within Scotland, bottlenose dolphin occur in both coastal and continental shelf waters where they form separate inshore and offshore populations (NatureScot, 2025). Inshore, they are spotted frequently on both the east and west coasts of Scotland, with observations less common on the north coast and in the Northern Isles. The AoI lies within both the Greater North Sea MU and the Central East Scotland MU for bottlenose dolphin. These MUs support approximately 1,885 animals and 224 animals, respectively (IAMMWG, 2023). The CES MU ranges from Orkney to the Forth of Firth, with the highest frequency of sightings occurring within the inner Moray Firth, associated with the Moray Firth SAC. The bottlenose dolphins found in the Moray Firth SAC are part of a Scottish east coast population that ranges south past Aberdeen, to the Firths of Tay and Forth, and is present year-round (Arso Civil *et al.*, 2021). Recent studies indicate a potential southerly range shift, or expansion of the inshore bottlenose dolphins that were originally associated predominantly with the Moray Firth, with sightings of individuals from this population further south towards St Andrews Bay and the Tay estuary (Arso Civil *et al.*, 2021). Bottlenose dolphins were not recorded as part of SCANS-IV density estimates, however as part of the SCANS-III survey, the density of bottlenose dolphin within SCANS block S (within which the AoI is wholly located) is 0.0037 animals/km^2 (Hammond *et al.*, 2021). Habitat-based density modelling predicts that the density of bottlenose dolphin in the AoI is low (Gilles *et al.*, 2025).

3.1.4 White-beaked dolphin

White-beaked dolphins inhabit continental shelf, shelf edge and slope waters of cold temperate and sub-polar waters of the north Atlantic Ocean. In Scotland, white-beaked dolphins are most commonly sighted in the waters around the Hebrides, the north west coast, east coast and northern isles (Scottish Environment Link, 2025). The AoI lies wholly within the Celtic and Greater North Seas MU for white-beaked dolphin, with an abundance of 43,951 (IAMMWG, 2022). The SCANS-IV surveys recorded densities of 0.14 animals/km^2 in block CS-K and 0.18 animals/km^2 in block NS-E. Habitat-based density models predict that the density of white-beaked dolphin is highest in the offshore waters between the Shetland Islands and the Moray Firth, with lower densities expected in nearshore (Gilles *et al.*, 2025).

3.1.5 Risso's dolphin

The majority of sightings of Risso's dolphin within UK waters occur along the west coast of Scotland and the Outer Hebrides (NatureScot, 2025). This species is resident year-round in Scotland, with the highest densities observed during the summer months. The AoI lies wholly within the Celtic and Greater North Seas MU for Risso's, with an abundance of approximately 12,262 animals (IAMMWG, 2022). The density of Risso's dolphin recorded during the SCANS IV surveys in blocks CS-K and NS-E was 0.04 animals/km^2 and 0.07 animals/km^2, respectively (Gilles *et al.*, 2023). No habitat-based density modelling was conducted by Gilles *et al.*, (2025) for Risso's dolphin.

3.1.6 Killer whale

Killer whales are most commonly sighted on the north and west coast of Scotland, with a small pod of resident killer whales present year-round on the west coast and northern pods commonly sighted in Shetland and Orkney (Scottish Seabird Centre, 2025). Although killer whales are generally considered rare within UK waters, there has been an increase in sightings since systematic recording began in 1989, with animals commonly observed 80-150 km off the

north coast of Shetland (SeaWatch Foundation, 2012). While there is evidence of these animals occurring within Scottish waters, they are not considered to occur frequently enough to require further assessment as there are no reliable population estimates to assess against. For example, sightings of killer whale were too low during the SCANS-IV surveys to determine abundance or density estimates (Gilles *et al.*, 2023).

3.1.7 Other species

Shucksmith (2017) note that the following other species may be present at a lower frequency in the waters around the Shetland Islands: common dolphin (*Delphinus delphis*), striped dolphin (*Stenella coeruleoalba*), white-sided dolphin (*Lagenorhynchus acutus*), humpback whale (*Megaptera novaeangliae*), pilot whale (*Globicephala melas*), pygmy sperm whale (*Kogia breviceps*), sperm whale (*Physeter macrocephalus*), sei whale (*Balaenoptera borealis*), and beluga whale (*Delphinapterus leucas*). Of these species, density estimates within the relevant SCANS-IV blocks for the AoI are available for white-sided dolphin only (within NS-E at a density of 0.015 animals/km^2). All other species were either not recorded within SCANS-IV blocks CS-K or NS-E or recorded at a density too low for abundance or density estimates. These species were also not recorded within the relevant SCANS-III block for the AoI (Hammond *et al.*, 2021).

3.1.8 Summary

The distribution, density and abundance of the most commonly sighted cetacean species which are likely to occur within the AoI are summarised in Table 3-2 below. The distribution, density and abundance of animals have been based on data provided by Gilles *et al.*, (2023) and the IAMMWG (2023)[2].

Table 3-2 Population Parameters for Cetacean Species Potentially Present within the AoI

SPECIES NAME	ESTIMATED DENSITY ACROSS THE PROJECT AREA[3] (INDIVIDUALS/km^2) (GILLES *et al.*, 2023)	ESTIMATED ABUNDANCE WITHIN THE AoI (1,498 km^2)	MU / BIOGEOGRAPHICAL POPULATION ESTIMATE (IAMMWG, 2023)	PROPORTION OF THE MU POTENTIALLY AFFECTED BY SURVEY ACTIVITIES
Harbour porpoise	0.5156	772	346,601	0.2%
Risso's dolphin	0.0702	105	12,262	0.9%
Bottlenose dolphin[4]	0.0037	6	224	2.5%
Minke whale	0.0121	18	20,118	0.1%
White-beaked dolphin	0.1775	266	43,951	0.6%
White-sided dolphin	0.0146	22	18,128	0.1%

[2] *Abundance estimates remain unchanged from IAMMWG (2022).*
[3] *Density estimates taken from SCANS-IV survey blocks CS-K and NS-E, with most conservative density estimate presented for each species.*
[4] *Density estimates taken from SCANS-III survey block S, within which the AoI is wholly located.*

3.2 Potential Impact from Survey Activities

The primary risk to cetaceans and pinnipeds from the proposed survey activities arises from the generation of underwater sound. This sound poses the greatest potential for injury or behavioural disturbance to cetaceans and pinnipeds in the vicinity of the survey activities. The impacts on cetaceans and pinnipeds can be categorised as follows:

- Injury – Physical harm, such as damage to auditory structures or other internal organs; and/or
- Disturbance – Temporary or ongoing disruption of natural behaviours, including migration, breathing, nursing, breeding, foraging, social interaction, and sheltering.

To evaluate the potential effects of underwater sound, predicted sound levels are compared against established thresholds for injury and disturbance. Various criteria and methodologies exist for assessing how marine mammals perceive sound – such as the dBht method and other hearing-weighted or linear measures – each with its own strengths and limitations.

Scottish Government guidance (2020) guidance recommends using injury and disturbance thresholds proposed by Southall *et al.* (2007). These thresholds incorporate both unweighted peak SPL and hearing-weighted Sound Exposure Levels (SEL). Since the publication of this foundational work, further research – particularly on species like harbour porpoise – has led to updated auditory injury thresholds (e.g. NOAA, 2018; Southall et al., 2019), reflecting improved understanding of marine mammal hearing capabilities. Following regulator feedback, these updated hearing groups are detailed within Table 3-3 below. The injury and disturbance thresholds adopted herein for each hearing group listed in Table 3-3 are described in further detail in Section 3.3.

Table 3-3 Auditory Bandwidths Estimated for Cetaceans (Southall et al., 2019; NOAA, 2018)

HEARING GROUP	ESTIMATED AUDITORY BANDWIDTH
Low-frequency cetaceans (LF): (e.g., baleen whales, such as humpback whales, minke whales, fin whales, etc.)	7 Hz to 35 kHz
High-frequency cetaceans (HF): (e.g., dolphins, toothed whales, beaked whales and bottlenose whales)	150 Hz to 160 kHz
Very high-frequency cetaceans (VHF): (e.g., harbour porpoises and other 'true' porpoises)	275 Hz to 160 kHz
Phocid carnivores in water (PW): (e.g., earless, or 'true' seals, such as grey and harbour seals)	75 Hz to 100 kHz

3.3 Sound Assessment Criteria

This section outlines the sound assessment criteria that has been used to assess sound-related impacts to cetaceans and pinnipeds. Underwater sound modelling was conducted using Xodus' SubsoniX model for all underwater sound sources.

3.3.1 Injury

Proposed injury criteria by NOAA (2018) and Southall *et al.* (2019) were established for two different types of sound:

- Impulsive: These sounds are short in duration (i.e., less than 1 second), temporary, and occupy a broadband bandwidth, and have a rapid rise and decay time with a high peak pressure level; and
- Non-impulsive: These sounds can occupy a broadband, narrowband or tonal bandwidth, and may be brief, prolonged continuous, or intermittent in nature. They are not characterised by rapid rise and decay times or a high peak pressure level.

The surveys proposed for this Project will emit multiple pulsed sounds, as detailed in Table 3-1. The sound generated from this equipment will disperse through the water column, with sound pressure decreasing as distance from the source of the sound increases. Therefore, marine mammals will be exposed to a lower sound pressure the further they are located from the sound source. To assess the potential for injury to marine mammals, the dispersion of sound through the water column has been modelled to determine the appropriate mitigation zone, ensuring that the received sound pressure levels are reduced below potentially injurious levels.

A duel-metric approach has been adopted to identify the range of potential injury to marine mammals based on the source level, including the peak pressure and cumulative SELs for each equipment type which has the potential to result in acoustic injury to marine mammals (see Table 3-1). The thresholds at which each marine mammal hearing group may experience sound-related injury are presented in Table 3-4. These thresholds are derived from measurements of marine mammal hearing using weighted functions which account for peak hearing abilities for each group (NOAA, 2018).

Table 3-4 Criteria Considered in this Assessment for the Onset of Injury in Marine Mammals from Underwater Sound (NOAA, 2018; Southall et al., 2019)

MARINE MAMMAL HEARING GROUP	IMPULSIVE SOUND		NON-IMPULSIVE SOUND
	PEAK PRESSURE (dB re 1 µPa)	CUMULATIVE SEL (dB re 1 μPa^2s)	CUMULATIVE SEL (dB re 1 μPa^2s)
LF cetaceans	219	183	199
HF cetaceans	230	185	198
VHF cetaceans	202	155	173
Phocid pinnipeds in water (PW)	218	185	201

3.3.2 Disturbance

To determine whether the proposed surveys could constitute a disturbance offence (as defined in Section 1.3.1), it is essential to assess if the activities may cause a non-trivial disturbance. This assessment considers the sensitivity of the species present and if the number of individuals affected could result in population-level impacts. If there is a risk of disturbing even a single individual, an EPS Licence must be obtained to avoid committing an offence.

When issuing an EPS Licence, MD-LOT must evaluate whether the species' FCS would be affected. Therefore, the potential impacts of the proposed activities on the FCS of all protected species must be assessed in accordance with Regulations 39(1) and 39(2) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and Regulation 45(1) and 45 (2) of the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended).

Based on recent stakeholder feedback, a conservative 5 km Effective Deterrence Range (EDR) has been applied to assess potential disturbance from UHRS and SBP survey equipment. This range is recommended by the JNCC (JNCC, 2020) for evaluating underwater sound impacts on harbour porpoise during geophysical surveys. It is important to note that this estimate is based on general assumptions about equipment specifications and frequencies that may disturb harbour porpoise. Applying the 5 km EDR to all marine mammals is considered highly precautionary.

The 5 km EDR is not deemed appropriate for USBL due the low source level of this equipment (<207 dB re 1 µPa), significantly lower than that of SBP and UHRS. For USBL, disturbance assessments are based on auditory thresholds defined by the National Marine Fisheries Service (NMFS, 2014) and behavioural response criteria from Southall *et al.* (2007). These thresholds (expressed in SPL_{rms}) and the associated behavioural response severity ratings are detailed in Table 3-5.

Table 3-5 Disturbance Threshold Criteria for Impulsive Sounds (Southall et al.*, 2007; NMFS, 2014)*

BEHAVIOURAL EFFECT	THRESHOLD CRITERIA SPL_{RMS} (dB re 1µPa)
Potential strong behavioural reaction (6 or more on the severity scale)	160

3.4 Sound-related Impacts to EPS and Pinnipeds

3.4.1 Sound Modelling Approach

Underwater sound modelling has been undertaken using Xodus' SubsoniX model. Xodus' SuboniX model was developed specifically for assessing the environmental impacts of underwater sound. The SubsoniX model approach is based on an extended version of the semi-empirical model developed by Marsh-Schulkin (Marsh and Schulkin, 1962). The sound propagation model uses several concepts, including:

- Refractive cycle, or skip distance;
- Geometric divergence;
- Deflection of energy into the bottom at high angles by scattering from the sea surface;
- A simplified Rayleigh two-fluid model of the bottom for sand or mud sediments; and
- Absorption of sound energy by molecules in the water.

The following inputs are required for the model:

- Sound source level data;
- Discreet range (distance from source to receiver);
- Water column depth and sediment layer depth;
- Sediment type (sand/mud);
- Sea state; and
- Source directivity characteristics.

The model has been developed using standard assumptions and a realistic worst-case assessment. The model is based on a combination of acoustic theory and empirical data from around 100,000 measurements and has been found to provide good predictions.

The dual-metric assessment approach (NOAA, 2018) has been used to estimate injury impact range from: (1) the peak SPL; and (2) the weighted cumulative SEL criteria. The SEL representatives the total energy produced by a sound-

generating activity standardised to a one-second interval. This enables comparison of the total energy attributed to different activities with different inter-pulse intervals. As detailed in Table 3-3, empirically-based weighting functions have been applied to the modelling outputs to account for peak hearing sensitivity for the respective marine mammal hearing groups (NOAA, 2018; Southall *et al.*, 2019).

The following assumptions have been applied to the models:

- Maximum reported SPLs for all equipment have been used;
- Maximum pulse length and minimum turn around has been used where provided;
- Where data is unavailable, the time between pulses has been calculated as 1.5 times the pulse length;
- Vessels are moving at slow speeds; and
- Survey equipment likely to be used in the nearshore shallow water environment (i.e. <10 m) will be very high frequency to provide better resolution and will have a lower SPL, and so does not constitute a worst-case scenario.

The directional characteristics of sound sources are also an important factor which influence received sound pressure levels from sound-generating activities. During geophysical surveys, source arrays are designed so that the energy emitted by acoustic survey equipment is highly directional, with significantly greater intensity directed vertically downward compared to the horizontal plane. Specifically, sound levels across the horizontal plane are typically more than 20 dB lower than that emitted directly downwards (Richardson *et al.*, 1995). This directional disparity is further influenced by the frequency-dependent nature of sound propagation: higher frequencies experience greater attenuation over horizontal distances than lower frequencies. To account for this directional variation, directivity corrections are applied to the acoustic modelling outputs to provide broadband normalised amplitudes at varying angles of azimuth and dip. The corrections assumed that the animal is directly in-line with the vessel.

As outlined in Section 3.3.2, the disturbance threshold for USBL is evaluated using the SPL_{rms} metric, and hence needs to be evaluated against equipment source levels in SPL_{rms}. It is important to note that the rms value associated with SPL_{rms} is influenced by the duration of the integration window used. A longer integration window results in a lower rms value, as it averages the sound energy over a greater time period, whereas a shorter window yields a higher SPL_{rms}.

An additional acoustic phenomenon results from waveform elongation with increasing distance from the source. This effect arises due to a combination of dispersion and multiple reflections, which cause the acoustic signal to stretch temporally. Breitzke *et al.* (2008) observed that the T90 window—the time interval containing 90% of the cumulative sound energy—can extend up to approximately 800 milliseconds at 1 km. This temporal "smearing" reduces the SPL_{rms} amplitude at greater distances by effectively lengthening the integration window over which the sound energy is distributed. This effect has been incorporated into the disturbance modelling scenarios to ensure realistic representation of received levels. Since the auditory organs of most marine mammals integrate low frequency sounds over an acoustic window of around 200 ms (Madsen *et al.*, 2006 and references therein), this duration was used as a maximum integration window for the received SPL_{rms}.

3.4.2 Injury Impacts

Potential injury to cetaceans (including injury which results in Permanent Threshold Shift (PTS) in hearing abilities) is limited to impulsive sound sources which exceed the injury thresholds defined in Table 3-4.

Modelling of the ranges at which injury impact may occur from deployment of geophysical survey equipment has been undertaken. Example equipment have been selected to exemplify the realistic worst-case scenario for UHRS SBP and USBL, including the maximum SPLs across source frequencies meant to encapsulate the hearing abilities of

all representative heading groups. Potential impacts from sound sources which are strictly behavioural in nature (i.e. disturbance impacts) have been covered in Section 3.3.2.

All of the survey technologies modelled have the potential to cause injury to EPS and other marine mammals (Table 3-6). As such, the survey activities may be potentially injurious to EPS species without appropriate mitigations.

Across modelling scenarios and metrics, the injury ranges were generally highest for the VHF hearing group (Table 3-6), which is represented by the harbour porpoise in UK waters. Conversely, HF cetaceans represent the hearing group with the lowest injury impact ranges for the peak SPL. Additionally, for both the SBP and USBL equipment, LF cetaceans largely have the lowest impact ranges for the cumulative SEL metrics, whereas HF cetaceans demonstrated the lowest impact ranges for both SEL metrics when considering use of the low frequency UHRS system (Table 3-6).

Higher frequency sounds, like those from a SBP operating at 100 kHz, lose energy quickly in water compared with lower frequency sounds. This means marine mammals would need to be very close to the sound source – within tens of metres – for any risk of injury.

For USBL used in 100 m water depths, the potential impact range for VHF cetaceans is up to 43 m, based on cumulative SEL. However, for this threshold to be exceeded, an animal would need to stay within that range for a prolonged period. This is highly unlikely, as USBL is usually deployed from moving vessels or from equipment near the seabed, such as ROVs. Even when used from stationary vessels (e.g., during geotechnical sampling), these operations are typically of a short duration. As a result, the risk of injury from USBL use is considered very low, and no specific marine mammal mitigation is proposed for USBL operations.

The greatest injury ranges to marine mammals during shallow water operations (i.e. 10 m) comes from both the UHRS operating at 0.1 kHz and SBP operating at 4 kHz, wherein refraction off the seabed causes nearly immediate cylindrical spreading of sound emissions, causing the sound to travel farther along the horizontal plane of the water column more quickly. The deployment of the UHRS survey equipment in 10 m depths has a potential range of impact to a maximum of 559 m for VHF cetaceans. SBP operating at 4 kHz in shallow waters demonstrated a maximum impact range of 445 m for VHF cetaceans.

Whilst deployment of a very low frequency UHRS system and a low frequency SBP in nearshore waters constitutes a worst-case situation for potential injury range arising from the survey activities, these scenarios are highly unlikely. Geophysical survey technologies generally employ higher frequency sounds in shallow waters where sound loss to absorption and transmission are much lower (Applied Acoustics, 2022). As such, sound penetration below the seabed is achievable at lower powers and higher frequencies, which offer higher resolution imagery to the surveyor. Furthermore, the vast majority of power is contained within a roughly 40° angle from the source (i.e., the slant height of the conical sound source) to maximise penetration and the resultant imagery. The beam of sound generated is directed downwards towards the seabed. Therefore, animals would need to be located at the seabed below the sound source to experience the full sound levels behind modelled impact ranges.

The greatest potential injury range for marine mammals in deeper waters (i.e., 100m) is identified from the operation of the very low frequency UHRS (0.1 kHz), where the potential impact range to VHF cetaceans is modelled at 511 m when considering the peak SPL metric. These impact ranges for the UHRS were slightly reduced, when considering the operation of the equipment within the higher frequency scenario (6 kHz).

Most injury ranges were slightly reduced when accounting for animal movement during cumulative SEL calculations. Marine mammals likely to be present in the AoI are capable of relatively high swim speeds. For example, minke whales can cruise at around 3.25 m/s and harbour porpoises can reach speeds up to 4.3 m/s (Blix & Folkow, 1995; Otani *et al.*, 2000). NatureScot (2016) also provides standard average swim speeds for species in the region, including:

- Harbour porpoise: 1.4 m/s (Westgate *et al.*, 1995);
- Harbour/grey seal: 1.8 m/s (Thompson, 2015); and
- Minke whale: 2.1 m/s (Williams, 2009).

To reflect a representative underwater sound model which captures movement of marine mammals away from the sound source, a mean swim speed of 1.5 m/s was used. It is expected that marine mammals will move away from the sound source at an angle opposing the vessel's direction. This movement reduces the cumulative SEL exposure, meaning the actual risk of injury is likely lower than static models might suggest.

It should also be noted that the modelling scenarios are meant to define worst-case injury ranges associated with the deployment of equipment during the Project survey activities. The in-situ deployment of sound-generating survey equipment will most frequently occur in waters of between 10-100 m in depth. The injury ranges anticipated to result from equipment use are therefore considered likely to occur within the spectrum of those defined by modelled outputs, thereby reducing the impact ranges associated with low frequency survey equipment.

Due to the potential for injury to EPS resulting from SBP and UHRS operations, marine mammal mitigation will be implemented if SBP and UHRS are used. Available mitigation measures specifically designed for geophysical surveys (JNCC, 2017) have been incorporated into mitigation measures described in Section 5 below. These measures include deployment of a Marine Mammal Observer (MMO) to monitor for the presence of cetaceans within a 500 m mitigation zone prior to the commencement of, and during, any SBP or UHRS surveys (JNCC, 2017).

Based on modelling results for the UHRS system operating at 0.1 kHz, a maximum injury range of 559 m was identified for VHF cetaceans in shallow waters. As a precaution, it is proposed that the marine mammal mitigation zone for this equipment be extended to 600 m – an increase from the standard 500 m radius recommended by JNCC (2017). For SBP and UHRS at 6 kHz, the standard 500 m mitigation zone remains appropriate.

Across all modelled scenarios, no injury thresholds are predicted to be exceeded beyond the proposed mitigation zones (500 m or 600 m, depending on the equipment). Since EPS and pinnipeds would need to enter these zones – and likely follow the moving vessel or towed equipment – to be at risk, the application of these mitigation measures will prevent injury. Therefore, the survey activities are not anticipated to impair the survival or reproductive success of any individuals, nor are they expected to be detrimental to the FCS of any EPS.

Table 3-6 Sound Modelling Results for Injury Impacts from Impulsive Sound Sources (N/E = no exceedance of thresholds)

ACTIVITY	FREQUENCY (kHz)	SPL_{PEAK} (dB re 1µPa)	DEPTH (m)[5]	INJURY RANGE (m)											
				WEIGHTED CUMULATIVE SEL (STATIC MAMMALS)				WEIGHTED CUMULATIVE SEL (MOVING MAMMALS)				UNWEIGHTED SPL_{PEAK}			
				VHF	HF	LF	PW	VHF	HF	LF	PW	VHF	HF	LF	PW
USBL	19.5 – 33.5	207	100	43	8	4	5	38	2	1	1	3	N/E	N/E	N/E
			10	4	4	2	3	4	2	N/E	N/E	3	N/E	N/E	N/E
SBP	0.5 - 12	230	100	40	38	38	38	38	38	38	38	61	3	8	9
			10	5	4	4	4	5	4	4	4	73	4	13	15
	4	235	100	9	5	9	9	9	5	6	5	255	28	68	73
			10	N/E	N/E	N/E	N/E	N/E	N/E	N/E	N/E	445	98	178	188
	100	235	100	28	17	17	17	19	17	16	17	30	12	17	18
			10	N/E	N/E	N/E	N/E	N/E	N/E	N/E	N/E	29	11	16	17
UHRS[6]	0.1	250	100	10	N/E	44	41	2	N/E	44	13	511	17	63	70
		250	10	3	N/E	4	4	2	NE	4	4	559	19	71	80
	6	250	100	44	44	44	44	44	44	44	44	381	14	49	54
		250	10	4	4	4	4	4	4	4	4	412	15	55	62

[5] *These depths have been identified as representative of the nearshore and offshore depths in which surveys are likely to occur across the AoI, based on available bathymetry data.*
[6] *Sound modelling for UHRS undertaken based on a ping range of 0.0003 – 0.0015 second ping length, with 0.0015s results presented to represent the realistic worst-case scenario.*

3.4.3 Disturbance Impacts

In addition to the potential for auditory injury, underwater sound emissions associated with survey activities have the potential to result in behavioural impacts to marine mammals. Significant or strong disturbance (as detailed in Section 3.3.2) may occur when an animal is at risk of chronic or sustained disruption of behaviour or habitat use which results in a population-level effect. An assessment of potential disturbance impacts from USBL, SBP and UHRS operations is provided below.

As outlined in Section 3.3.2, a 5 km EDR has been used to estimate the range of disturbance to marine mammals associated with UHRS and SBP operations, whereas disturbance arising from USBL operations has been estimated through a modelling approach using auditory thresholds for disturbance defined by NMFS (2014), along with the behavioural criteria provided by Southall *et al.*, (2007). The range of behavioural change based on the 5 km EDR for UHRS and SBP and the outputs of sound modelling for USBL are provided in Table 3-7 below.

Table 3-7 Sound Modelling Results for Disturbance Impacts from Impulsive Sound Sources

ACTIVITY	FREQUENCY (kHz)	SPL_{RMS} (dB re 1µPa)	DEPTH (m)	RANGE OF BEHAVIOURAL CHANGE (m)
USBL*	19.5 – 33.5	190	100	63
			10	64
SBP**	0.5 – 12	227	All	5,000
	4	230	All	
	100	230	All	
UHRS**	0.1	247	All	
	6	247	All	

* Estimated through a modelling approach using auditory thresholds for disturbance as defined by the NMFS (2014), along with behavioural response criteria from Southall *et al.* (2007).
** Estimated using the 5 km EDR for geophysical surveys (JNCC, 2020).

SBP, USBL, and UHRS survey activities have the potential to cause significant disturbance events, as outlined in Section 1.3.1. The potential for a disturbance offence to result from these types of technology varies between activity type, though, the predicted disturbance range is much greater for the low frequency sound sources which travel further within the marine environment. Specifically:

- SBP systems (operating at 0.5–12 kHz or 4 kHz) and UHRS systems (operating between 0.1–6 kHz) emit lower-frequency sounds. Based on the EDR) from JNCC (2020), it is conservatively estimated that these sounds could cause disturbance up to 5 km from the source; and
- USBL systems, which operate at higher frequencies and lower source levels, are estimated to have a disturbance range of only 64 m (see Table 3-8).

The estimated number of individuals potentially affected by the worst-case scenario for each survey type is presented in Table 3-8, using population data from Table 3-2. The impact ranges serve as the radii with which to calculate the total area of coverage for a potential disturbance event associated with each survey activity.

Table 3-8 Number of Cetaceans which May Experience a Disturbance Offence from Impulsive Survey Activities Based on Known Population Parameters of the Most Frequently Occurring Species

SPECIES NAME	NUMBER OF INDIVIDUALS WHICH MAY INCUR A STRONG DISTURBANCE		PROPORTION OF THE MU POTENTIALLY AFFECTED BY PROJECT ACTIVITIES (%)
	USBL*	UHRS and SBP**	
	19.5 – 33.5 kHz (0.02 km^2)	UHRS: 0.1 – 6 kHz SBP: 0.5 – 12 kHz (chirp); 4 kHz (pinger); 100 kHz (pinger) (78.54 km^2)	
Harbour porpoise	0.01	40.5	0.01
Risso's dolphin	<0.01	5.5	0.045
Bottlenose dolphin***	<0.01	0.29	0.13
Minke whale	<0.01	0.95	0.005
White-beaked dolphin	<0.01	13.9	0.03
White-sided dolphin	<0.01	1.15	0.006

*Estimated through a modelling approach using auditory thresholds for disturbance as defined by the NMFS (2014), along with behavioural response criteria from Southall *et al.*, (2007).
** Estimated using the 5 km EDR for geophysical surveys (JNCC, 2020).
***Animal density using SCANS III data.

The underwater sound from the survey activities has the potential to result in a strong behavioural response in EPS which could be classed as a disturbance offence (as defined under the Habitats Regulations). Despite this, none of the EPS species which are known to regularly to occur within the AoI are likely to experience significant disturbance impacts as a result of geophysical surveys, with 0.13% or less of the relevant biogeographic populations predicted to be impacted by sound-related disturbance.

The greatest potential for disturbance impacts to EPS are associated with the impulsive SBP and UHRS survey activities (with an applied disturbance range of 5 km). Assuming disturbance out to this range result in a maximum of 40.5 harbour porpoise individuals being disturbed, this still relates to 0.01% of the MU potentially being disturbed by proposed survey activities (Table 3-8).

Furthermore, with regards to USBL operations, the number of animals within the range of potential disturbance at any one time is predicted to be 0.01 individuals or less (Table 3-8). This means that on average, there will be no marine mammals within the disturbance range for approximately 99.9% of USBL operations, making potential disturbance impacts at the population level arising from this survey equipment negligible. It is therefore considered that USBL operations do not have the potential to result in an EPS disturbance offence under the Habitats Regulations, and hence an EPS licence is not required for the use of USBL. This is in alignment with Marine Scotland guidance (2021), which states that an EPS licence will not be required if it can be demonstrated that the proposed activity will result in the disturbance of < 1 animal.

As the survey vessel will not be stationary for prolonged periods during these activities, animals within a particular area will not be exposed to extended periods of underwater sound. Rather, animals would have to follow the moving equipment for a longer period of time in order to be subject to an underwater sound level that has the potential to result in a detrimental effect to either an individual or a population (i.e. significant disturbance), which is highly unlikely.

The proposed survey activities for the Project are scheduled to be undertaken within a five-year period between 23rd February 2026 and 31st December 2030. The proposed survey activities are anticipated to be completed during a total of 510 days over the five-year period (110 days for the first year (including 39 days outwith 12 NM) and up to 100 days per year for each of the remaining four years). During the survey activities there will be periods of inactivity and downtime for bad weather and the activities will not be continuous (i.e. the surveys will be conducted as distinct campaigns each year). Given the highly localised, transient and temporary nature of proposed survey activities, it is considered highly unlikely that any disturbance from UHRS or SBP survey activities would result in a detrimental effect on the FCS of any cetacean species which may be present within the AoI. This outcome has been determined on the basis that the predicted level of disturbance is unlikely to affect the ability of an animal to survive or reproduce and will not have significant population-level impacts on any EPS AoI.

It is possible that a small number of animals may experience some level of disturbance as a result of proposed survey activities. As such, an EPS Licence will be required for disturbance of cetaceans potentially resulting from UHRS and SBP survey activities, in accordance with the Habitat Regulations.

3.5 Basking Shark

Basking sharks are the second largest fish species in the world and one of only three species of shark which filter feed (Sims, 2008). While there have been basking shark observations throughout the UK coastline, these animals are more frequently sighted on the west coast of Scotland, the south-west of England, Wales and the Isle of Man (Scottish Wildlife Trust, 2025).

By nature, basking sharks demonstrate a generally low sensitivity to sound-related pressures as they do not have a swim bladder. While the general hearing range of basking sharks has not been defined, the hearing range of five other elasmobranch species (between 20 Hz to 1 kHz) may or may not be transferable to basking sharks (Macleod *et al.*, 2011). This 20 Hz to 1 kHz range encompasses only a small portion of underwater sound profiles which may arise as a result of Project survey activities. As the survey activities will be highly localised, temporary and occurring for a short duration, acoustic injury to basking sharks is not anticipated.

Basking sharks are a large, slow-moving species, and there is the potential for the physical presence of vessels to present a collision risk. The potential for collision risk increases with increased vessel speed. The survey vessels will be slow moving, and therefore, collision risk is anticipated to be generally low. In order to reduce the potential for collision risk further, SSEN Transmission will adopt the appropriate mitigation measures outlined in the Basking Shark Code of Conduct (Shark Trust, 2024) for all relevant survey activities for the duration of the survey campaign.

Basking sharks are commonly sighted in Scottish waters during the summer months and are more frequently observed on the west coast (Paxton *et al.*, 2014). They appear to aggregate in summer to breed, with peak observations in the west coast of Scotland occurring during August (Witt *et al.*, 2012). Marine Scotland's National Marine Plan Interactive (NMPi) (2025) indicate basking shark incidental sightings and distribution in Scotland's seas and shows that there are very few sightings of basking shark off the east coast of Scotland and around the Shetland Islands when compared to the west coast where basking sharks are known to aggregate.

Considering available information on the known distribution of basking sharks within Scottish waters, it is considered unlikely that interactions between the Project survey activities and basking sharks will occur. Therefore, the potential for the survey activities to result in intentional or reckless disturbance or harassment of this species is equally limited. Despite this, there remains the possibility that the physical presence of survey vessels may result in disturbance to basking sharks. Therefore, an application for a Basking Shark Derogation Licence under the Wildlife and Countryside Act 1981 (as amended) will be submitted.

3.6 Cumulative Effects

This cumulative effects assessment considers the proximity to proposed Offshore Windfarm (OWF) developments in the vicinity of the AoI (Table 3-9) for which there may be potential for temporal overlap between the marine survey activities (23rd February 2026 – 31st December 2030) and the OWF construction and/or operation and maintenance. Additionally, a review of the active EPS licences on the Marine Scotland Information website has been carried out to identify the potential for spatial and temporal overlap with other activities (Table 3-10).

It is acknowledged that there is the potential for cumulative effects to arise if the pre-construction surveys, construction works and operational surveys for these assets coincide with the survey activities for the Project. However, for significant cumulative effects on EPS to occur, more than one underwater sound generating activity will need to be affecting the same localised area for a prolonged period of time. Based on the conservative disturbance range estimates outlined in Section 3.4, and the short duration for which survey equipment will be operational at any one location (due to its transient nature), it is very unlikely that the proposed survey activities will coincide with another survey campaign and cause sound sources to overlap. In isolation and cumulatively, the predicted level of disturbance is unlikely to affect the ability of any individual animal to survive or reproduce and will not have significant population-level impacts to any EPS. Therefore, significant cumulative effects are not expected.

Table 3-9 Cumulative OWF Developments

DEVELOPMENT	PROJECT PHASE	CONSTRUCTION TIMELINE	DISTANCE TO AOI	POTENTIAL FOR SURVEY OVERLAP?
Moray OWF (West)	Under Construction	2022 – 2025	0 km (direct overlap with Moray OWF West cable corridor)	Yes – potential for overlap during operation and maintenance (no temporal overlap during construction).
Caledonia OWF	In Planning (Application)	2028 - 2030	~ 1 km	Yes – potential for temporal overlap during construction.
Stromar OWF	Pre-Application (Scoping)	Late 2020s - 2033	~ 2 km	Yes – potential for temporal overlap during construction.
Ayre OWF	Pre-Application (Scoping)	2029 – 2032	~9 km	Yes – potential for temporal overlap during construction.
Broadshore OWF	Pre-Application (Scoping)	Unknown	~9 km	N/A - Insufficient information available.
Sinclair OWF (Broadshore Hub)	Pre-Application (Scoping)	Unknown	~ 15 km	N/A - Insufficient information available.
Scaraban OWF (Broadshore Hub)	Pre-Application (Scoping)	Unknown	~20 km	N/A - Insufficient information available.
Buchan OWF	Pre-Application (Scoping)	2028 - 2032	~ 32 km	Yes – potential for temporal overlap during construction.

Table 3-10 EPS licences with temporal overlap with the Project Activities

EPS LICENCE NUMBER OR REFERENCE	NAME	LICENCE TO INJURE OR DISTURB	PERIOD LICENCE VALID FROM / TO	NUMBER OF EPS PREDICTED TO BE INJURED / DISTURBED
EPS/BS-00010597	European Protected Species Licence - Geophysical & Geotechnical Surveys - Moray Firth Spittal to Peterhead - EPS-00010441 / EPS-00010597	Disturb	16th November 2023 – 11th September 2028	It is not predicted that any individual animals will be injured by the licensed work. It is estimated that the total percentage of the reference population potentially disturbed will be low. Disturbance values are listed below: • Harbour porpoise: 640 (0.4% of reference population); • Bottlenose dolphin: 16 (7.1% of reference population); • White-beaked dolphin: 88 (0.3% of reference population); and • Minke whale: 40 (0.4% of reference population).
EPS/BS-00011253	European Protected Species Licence - Geophysical Survey - Yell to Mainland Shetland - 00011253	Disturb	18th September 2025 – 30th November 2030	Injury: The maximum range of injury (permanent threshold shift) from the survey activities has been modelled as 559 m, based on unweighted SPLpeak criteria (affecting VHF cetaceans), given the estimated abundance of harbour porpoise in the study area. . . this equates to <0.5 animals potentially being injured in the absence of mitigation (all other species/scenarios are less than <0.1 animals). With the implementation of mitigation, the number of individuals predicted to experience injury = 0. Disturbance: It is estimated that the total number of individuals disturbed will be minimal due to the transient nature of the animals and brief nature of the survey activities.
EPS/BS-00010598	Basking Shark Licence - Geophysical & Geotechnical Surveys - Moray Firth Spittal to Peterhead - BS-00010444 / BS-00010598	Disturb	17th November 2023 – 11th September 2028	< 1

EPS LICENCE NUMBER OR REFERENCE	NAME	LICENCE TO INJURE OR DISTURB	PERIOD LICENCE VALID FROM / TO	NUMBER OF EPS PREDICTED TO BE INJURED / DISTURBED
EPS-00010607 & BS-00010608	European Protected Species & Basking Shark Licence - Geophysical and benthic surveys, and routine inspections - Beatrice Offshore Wind Farm, Moray Firth - 00010607 / 00010608	Disturb	22nd February 2024 – 31st December 2027	Injury - 0 Disturbance - it is estimated that the total number of individuals disturbed will be minimal due to the transient nature of the animals and the brief nature of the survey activities.
MS-00010823	European Protected Species Licence - Geophysical, Geotechnical & Benthic Surveys - 00010823	Disturb	9th September 2024 – 31st October 2029	Injury - 0 Disturbance - it is estimated that the total number of individuals disturbed will be minimal due to the transient nature of the animals and the brief nature of the survey activities.
EPS-00010813	European Protected Species Licence - Geophysical Cable Surveys - 00010813	Disturb	7th September 2024 – 6th September 2029	Injury - 0 Disturbance - it is estimated that the total number of individuals disturbed will be minimal due to the transient nature of the animals and the brief nature of the survey activities.
EPS/BS-00010527/00010528	European Protected Species & Basking Shark Licence - Geophysical Survey - North coast and Orkney Marine region - 00010527/00010528	Disturb	1st February 2024 – 30th September 2028	No information provided on licence; however, licence provides that NatureScot advised that the activity will not be detrimental to the maintenance of the populations of the species concerned at FCS, this includes: harbour porpoise; bottlenose dolphin; minke whale; Risso's dolphin; short beaked common dolphin; killer whale; white-beaked dolphin; Striped dolphin.
EPS/BS-00010823	Orkney Regional EPS Licence Application: Orkney to Mainland High Voltage Alternating Current (HVAC) Subsea Link	Disturb	9th September 2024 – 31st October 2029	It is estimated that the total number of individuals disturbed will be minimal due to the transient nature of the animals and brief nature of the survey activities: • Harbour porpoise: ~15; • Risso's dolphin: ~2; • Minke whale: < 1; • White-beaked dolphin: ~7.

EPS LICENCE NUMBER OR REFERENCE	NAME	LICENCE TO INJURE OR DISTURB	PERIOD LICENCE VALID FROM / TO	NUMBER OF EPS PREDICTED TO BE INJURED / DISTURBED
MS-00010903/ MS-00010905	European Protected Species/Basking Shark Licence – Installation, Operation and Maintenance of Orbital O2 Tidal Turbine – Berth 5, EMEC, Fall of Warness – 00010903/00010905	Disturb	15th September 2024 – 14th September 2026	The EPS licence application states that there is a low number of cetaceans present at the Fall of Warness test site which could be disturbed, including the following species: harbour porpoise, minke whale, Risso's dolphin, killer whale and white-beaked dolphin.
EPS/BS-00010500	Impact Piling - Grutness Pier, Shetland	Disturb	1st February 2024 – 20th April 2027	The licence permits the disturbance to harbour porpoise, minke whale, Risso's dolphin, white sided dolphin, killer whale, white-beaked dolphin, humpback whale and long-finned pilot whale. The estimated number of individuals disturbed is as follows: • Harbour porpoise: 69; • Risso's dolphin: 14; • White-sided dolphin: 7; • Killer whale: 2; • Minke whale: 3; • Humpback whale: 2; and • Long-finned pilot whale: 4.

3.7 Conclusions

It is anticipated that, with consideration given to the proposed mitigation measures outlined in Section 5, the proposed survey activities will not result in injurious impacts to cetaceans. Therefore, there will be no requirement to apply for an EPS Licence in that respect. However, there is potential for disturbance to cetaceans resulting from the use of SBP and UHRS. As such, SSEN Transmission will apply for an EPS Licence in respect to the disturbance resulting from these activities.

The potential for disturbance arising from the proposed survey activities will be limited to one or a few individuals of the local population and will therefore not result in any adverse impacts to the FCS of any key cetacean species.

The use of USBL equipment will not result in any risk of auditory injury, and the extremely limited disturbance ranges result in a predicted ≤0.1% of individuals within a given biogeographic area at any given time. With consideration given to the highly localised, transient and temporary nature of proposed survey activities, it is concluded that the use of USBL equipment will not result in an EPS disturbance offence (as defined by the Habitats Regulations), and therefore an EPS Licence will not be requirement for this equipment.

While unlikely, there remains a possibility for disturbance to basking sharks to arise as a result of the physical presence of survey vessels. Therefore, an application for a Basking Shark Derogation Licence under the Wildlife and Countryside Act 1981 (as amended) will be submitted.

Overall, the proposed survey activities constitute work of overriding public interest while presenting a minor and temporary disturbance to a few individual animals in a limited area.

4 PROTECTED SITES IMPACT ASSESSMENT

4.1 Relevant Protected Sites

Since an EPS Licence and Basking Shark Derogation Licence will be required for the proposed survey activities, it is also necessary to assess potential impacts from Project activities on protected sites to inform the HRA and NCMPA assessment process. The protected sites located in the vicinity of the AoI which have the potential to be impacted by works associated with survey activities are outlined in Table 4-1 and shown in Figure 4-1, Figure 4-1 and Figure 4-3. These sites have been identified according to the criteria outlined in Section 1.4.

For each protected site that has been identified for its potential to be impacted by survey activities, relevant mitigation measures have been identified based on site-specific qualifying features and are included in Table 4-1. Further details on the proposed mitigation measures are provided in Section 5. It should be noted that some of the mitigation measures included in Section 5 may not be listed within Table 4-1 if they are not related to protecting qualifying features specific to those sites. However, all the mitigation measures outlined in Section 5 will be applied to all relevant survey activities, regardless of proximity to the protected site.

Sites of Special Scientific Interest (SSSIs) have only been screened into the assessment where there is the potential for ecological connectivity with the survey activities (i.e. sites designated for coastal and terrestrial features that will not be affected by the survey activities have not been considered). Where a SSSI or Ramsar protected for otter or bird features is wholly contained within an SAC or SPA, a specific assessment is not provided for the SSSI or Ramsar, as the SAC/SPA assessment is considered sufficient. Most designated features of SSSIs with connectivity with the marine environment are also qualifying features of European sites and will be screened into the Protected Sites Impact Assessment, where required, as per the criteria in Section 3.

Furthermore, initial landfall site selection assessment has been undertaken by SSEN Transmission for the Project. As part of this assessment, several sections of coastline have been identified as indicative landfall areas. The indicative landfall areas are shown within Figure 4-2 and Figure 4-3.

In areas where no indicative landfall sites are identified, no intertidal or nearshore surveys will take place (within 200 m of shore). As such, seal breeding and haul-out sites are only screened in if the site falls within 500 m of the identified indicative landfall areas (as per screening criteria outlined in Section 1.4.4). It should be noted that the indicative landfall areas illustrated in Figure 4-3 have been further refined through the site selection process, so they don't fully align with the boundary of the AoI. However, SSEN Transmission can confirm that the landfalls, and associated survey activities will be wholly located within the AoI defined in this assessment.

Given that the use of USBL does not require an EPS licence (detailed in Section 3.4) and geotechnical and benthic survey activities do not result in underwater sound emissions which could result in injury or disturbance to EPS, the geotechnical and benthic survey campaigns are not licensable under the Habitats Regulations, and therefore are not considered further in this assessment. As such there is no impact pathway for benthic and/or geological qualifying features of designated sites, which are also screened out of the assessment. A separate assessment of benthic and geotechnical survey activities will be conducted to inform the Marine Licence Exemption notification.

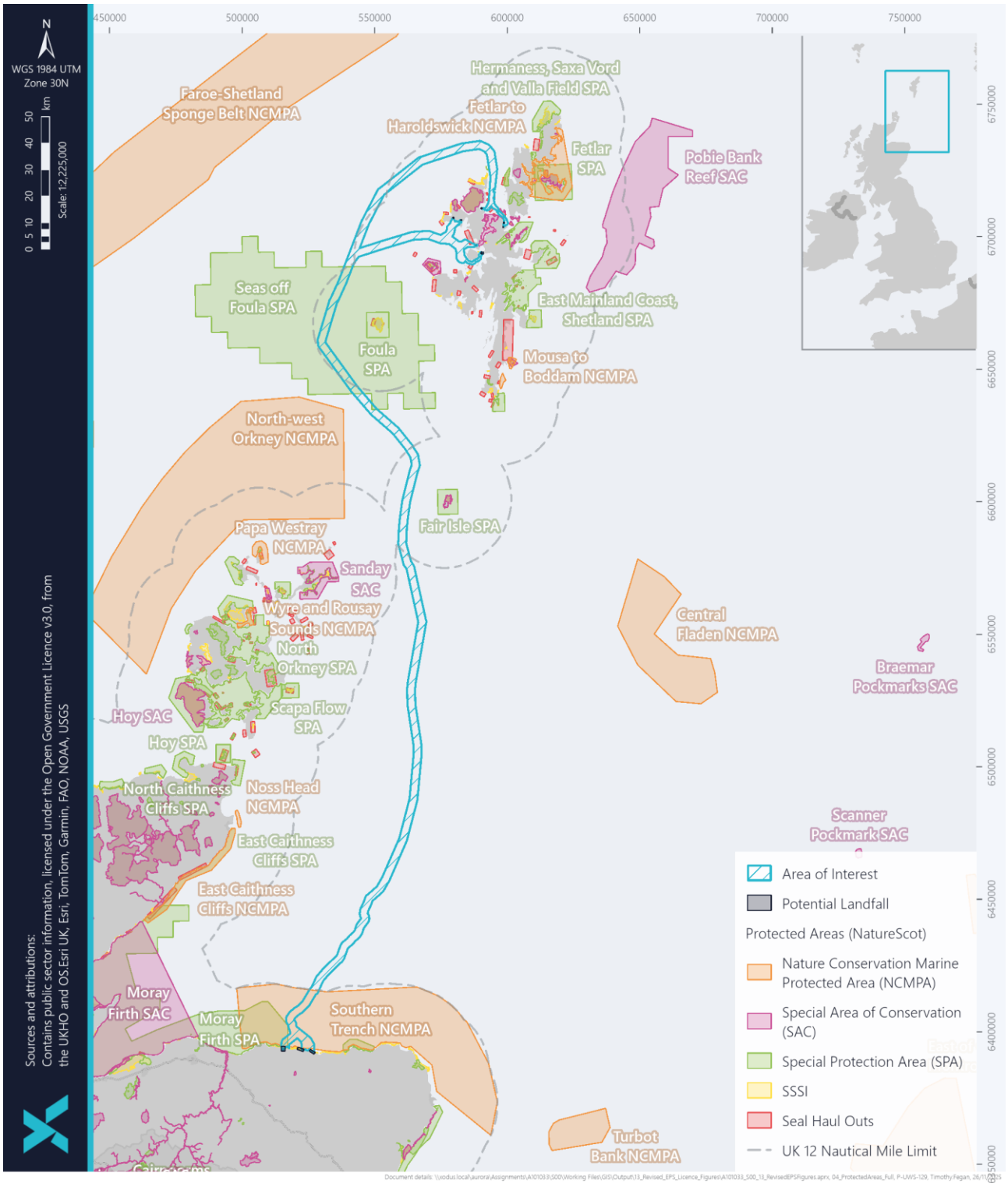

Figure 4-1 Protected sites throughout the AoI

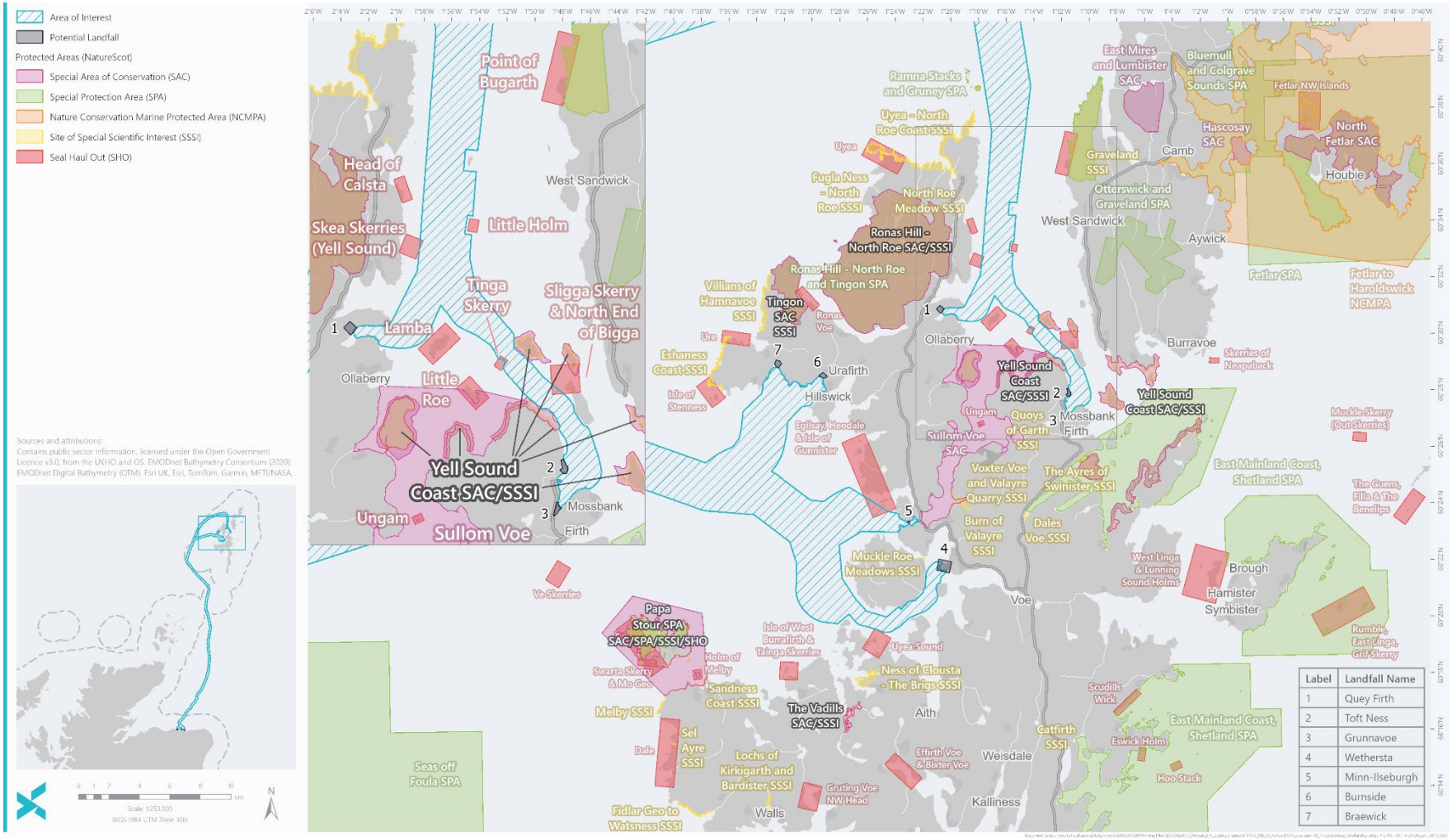

Figure 4-2 Protected Sites within the Vicinity of the Shetland Indicative Landfall Areas

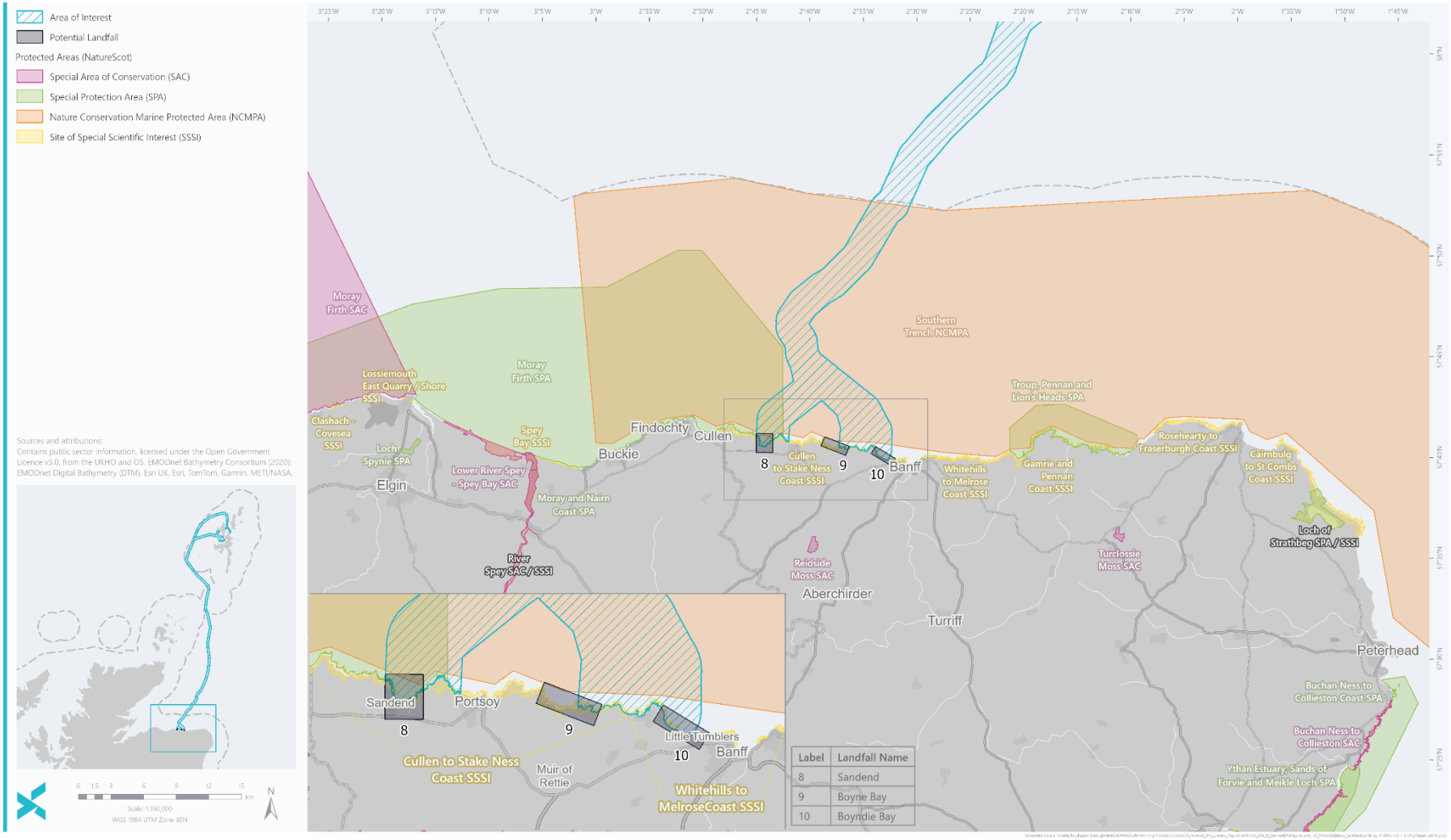

Figure 4-3 Protected Sites within the Vicinity of the Mainland Scotland Indicative Landfall Areas

Table 4-1 Protected Sites in the Vicinity of the AoI

PROTECTED SITE	LOCATION	CRITERIA FOR POTENTIAL CONNECTIVITY TO THE SITE	MINIMUM DISTANCE TO PROTECTED SITE[7] (km)	RELEVANT QUALIFYING FEATURES OF PROTECTED SITE	ACTIVITY	PROPOSED MITIGATION MEASURES	POTENTIAL FOR LIKELY SIGNIFICANT EFFECT
NCMPAs							
Southern Trench NCMPA	Mainland Scotland	The protected site is located within 50 km of the AoI for consideration of cetaceans.	0	• Minke whale.	• Vessel presence; and • Geophysical surveys.	• M1; • M2; • M3; • M4; and • M6.	Yes
SACs							
Yell Sound Coast SAC	Shetland Islands	The protected site is located within 50 km of the AoI for consideration of harbour seal and within 500 m for the consideration of otters.	< 0.1	• Harbour seal; and • Otter.	• Vessel presence; and • Geophysical surveys.	• M1; • M2; • M3; • M4; • M5; • M6; • M9; and • M10.	Yes
Sanday SAC	Orkney Islands	This protected site is within 50 km of the AoI for consideration of harbour seal.	24.9	• Harbour seal.	• Vessel presence; and • Geophysical surveys.	• M1; • M2; • M3; • M4; • M5; and • M6.	Yes
Moray Firth SAC	Mainland Scotland	This protected site is within 50 km of the AoI for consideration of cetaceans.	31.5	• Bottlenose dolphin.	• Vessel presence; and • Geophysical surveys.	• M1; • M2; • M3; • M4; and • M6.	Yes
Mousa SAC	Shetland Islands	This protected site is within 50 km of the AoI for consideration of harbour seal.	37.8	• Harbour seal.	• Vessel presence; and • Geophysical surveys.	• M1; • M2; • M3; • M4; • M5; and • M6.	Yes

[7] *Please note that these are straight-line distances.*

PROTECTED SITE	LOCATION	CRITERIA FOR POTENTIAL CONNECTIVITY TO THE SITE	MINIMUM DISTANCE TO PROTECTED SITE[7] (km)	RELEVANT QUALIFYING FEATURES OF PROTECTED SITE	ACTIVITY	PROPOSED MITIGATION MEASURES	POTENTIAL FOR LIKELY SIGNIFICANT EFFECT
SPAs							
Moray Firth SPA	Mainland Scotland	This protected site is within 2 km of the AoI.	0	• Black (common) scoter (*Melanitta nigra*) (non-breeding); • Common eider (*Somateria mollissima*) (non-breeding); • Common goldeneye (*Bucephala clangula*) (non-breeding); • European shag (*Gulosus aristotelis*) (non-breeding); • European shag (breeding); • Great northern diver (non-breeding); • Greater scaup (*Aythya marila*) (non-breeding); • Long-tailed duck (*Clangula hyemalis*) (non-breeding); • Red-breasted merganser (*Mergus serrator*) (non-breeding); • Red-throated diver (non-breeding); • Slavonian grebe (non-breeding); and • Velvet scoter (*Melanitta fusca*) (non-breeding).	• Vessel presence.	• M7; and • M8.	Yes
Seas off Foula SPA	UK Offshore Waters (Scotland)	This protected site is within 2 km of the AoI.	0	• Arctic skua (*Stercorarius parasiticus*) (breeding); • Atlantic puffin (*Fratercula arctica*) (breeding); • Common guillemot (*Uria aalge)* (breeding); • Common guillemot (non-breeding); • Great skua (*Stercorarius skua*) (breeding); • Great skua (non-breeding); • Northern fulmar (*Fulmarus glacialis*) (breeding); • Northern fulmar (non-breeding); • Seabird assemblage (breeding); and • Seabird assemblage (non-breeding).	• Vessel presence.	• M7; and • M8.	Yes
Ramna Stacks and Gruney SPA	Shetland Islands	This protected site is within 2 km of the AoI.	0.3	• Leach's petrel (*Oceanodroma leucorhoa*) (breeding).	• Vessel presence.	• M7; and • M8.	Yes
Ronas Hill - North Roe and Tingon SPA	Shetland Islands	This protected site is within 2 km of the AoI.	1.5	• Great skua (breeding); and • Red-throated diver (breeding).	• Vessel presence.	• M7; and • M8.	Yes
SSSIs and Ramsar Sites							
Yell Sound Coast SSSI	Shetland Islands	This protected site is within 500 m of the AoI.	< 0.1	• Otter.	• Vessel presence; and • Geophysical surveys.	• M9; and • M10.	Yes[8]
Ramna Stacks and Gruney SSSI	Shetland Islands	This protected site is within 2 km of the AoI.	0.3	• Guillemot (breeding); • Leach's petrel (breeding); and • Seabird colony (breeding).	• Vessel presence.	• M7; and • M8.	Yes[9]
Ronas Hill – North Roe SSSI	Shetland Islands	This protected site is within 2 km of the AoI.	1.5	• Red-throated diver (breeding); and • Breeding bird assemblage.	• Vessel presence.	• M7; and • M8.	Yes[10]
Ronas Hill – North Roe and Tingon Ramsar	Shetland Islands	This protected site is within 2 km of the AoI.	1.5	• Red-throated diver (breeding).	• Vessel presence.	• M7; and • M8.	

[8] As described in Section 4.1, the Yell Sound Coast SSSI is wholly contained within the Yell Sound Coast SAC, and as such a specific assessment is not provided for the otter feature of the Yell Sound Coast SSSI, as the SAC assessment of otter features is considered sufficient.

[9] The Ramna Stacks and Gruney SSSI is wholly contained within the Ramna Stacks and Gruney SPA, and as such a specific assessment is not provided for the breeding seabird features of the SSSI, as the SPA assessment of these features is considered sufficient.

[10] The Ronas Hill – North Roe SSSI and Ronas Hill – North Roe and Tingon RAMSAR are wholly contained within the Ronas Hill - North Roe and Tingon SPA, and as such a specific assessment is not provided for the red-throated diver feature of the SSSI and RAMSAR, as the SPA assessment of red-throated diver features is considered sufficient.

4.2 Assessment of Impacts on Protected Sites

4.2.1 SACs and NCMPAs with Cetaceans as Qualifying Features

There are two protected sites for cetaceans within 50 km the AoI within Scottish Territorial Waters:

- Southern Trench NCMPA, designated for minke whale (directly overlaps); and
- Moray Firth SAC, designated for bottlenose dolphin.

Minke whale are a LF cetacean with a maximum predicted injury range of up to 178 m, resulting from the operation of SBP at 4 kHz in shallow waters (10 m water depths). Bottlenose dolphin are a HF cetacean with a maximum predicted injury range of up to 98 m, also from the operation of SBP at 4 kHz in shallow waters. Thus, injury to minke whale and bottlenose dolphin will not occur when the 500 m mitigation zone is applied for SBP activities (detailed further in Section 5.1). Therefore, this assessment focusses on potential disturbance impacts to these species.

There is no resident population of minke whale within this NCMPA. As such, it is expected that the entire biogeographical population of this species would utilise this important NCMPA. As described in Section 3.4, the survey activities have the potential to disturb up to 0.95 minke whales, representing 0.005% of the Celtic and Greater North Seas MU. When considering the small percentage of the Celtic and Greater North Seas MU potentially disturbed, the transient and temporary nature of the survey activities, and the mitigation measures presented in Section 5, it is concluded that there will be no significant risk of affecting, other than insignificantly, the conservation objectives of this protected site with regards to impacts on minke whale.

The resident bottlenose dolphin population of the Moray Firth SAC is composed of 224 animals, equivalent to the population of the CES MU. As described in Section 3.4, the survey activities have the potential to disturb 0.29 bottlenose dolphins, representing 0.13% of the Moray Firth SAC (and CES MU) population. There is evidence to suggest that cetacean species have the ability to compensate for any immediate behavioural disturbance from vessel presence (Christiansen *et al.*, 2015; Christiansen and Lusseau, 2015), therefore reducing the immediate biological impact at both an individual and a population level. A study by New *et al.* (2013) reported that bottlenose dolphins of the Moray Firth population are likely to be able to compensate for the behavioural effects of vessel disturbance as the presence of vessels is not likely to lead to negative effects on bottlenose dolphin health, vital rates or population dynamics. Furthermore, while located in an area of existing high shipping intensity and ongoing offshore development, the Moray Firth SAC population of bottlenose dolphin has been assessed to be of Favourable conservation status, with numbers of animals at the Moray Firth SAC considered stable over the long-term (Cheney *et al.*, 2024). Due to the short duration and transient nature of proposed survey activities, the implementation of mitigation measures detailed in Section 5.1, it is therefore concluded that there will be no Adverse Effects on Site Integrity (AeoSI) on the Moray Firth SAC.

4.2.2 SACs with Seals as Qualifying Features and Designated Seal Haul Out Sites

There are no seal haul-out sites that are located within 500 m of an indicative landfall area. Therefore, there will be no nearshore works (e.g. geophysical survey and intertidal survey) located within close proximity to a seal haul-out site. As such, there is considered to be no potential for the survey activities to be harassed and no offence under Section 117 of the Marine (Scotland) Act 2010 is expected.

There are three SACs designated for harbour seals within 50 km of the AoI:

- Yell Sound Coast SAC/SSSI designated for harbour seal (< 0.1 km);
- Sanday SAC designated for harbour seal (24.9 km); and
- Mousa SAC designated for harbour seal (37.8 km from the AoI).

Harbour seals are vulnerable to disturbance associated with survey activities, particularly during their pupping and moulting seasons from mid-June to August. The proposed survey activities are scheduled between 23rd February 2026 and 31st December 2030, and therefore they may coincide with this critical period for harbour seal. Although the indicative landfall areas are not located within 500 m of a seal designated site, there is the potential for harbour seals associated with these sites to be present outside these areas. The presence of survey vessels or survey activities (within the nearshore environment have the potential to result in seals flushing (rapidly returning to sea) if such activities are conducted close to shore where seals are hauled-out. During the breeding season this may result in pup abandonment or crushing by adults. If disturbance occurs during the moulting period, seals returning to sea may experience thermoregulatory stress as their fur is not in suitable condition. As a result, disturbance to seals onshore as a result of the survey activities have the potential to result in a reduction in seal fitness at an individual or local population level, particularly if the disturbance effect occurs several times over a single period.

In order to reduce the risk of disturbance and flushing of seals during their most sensitive periods, if survey activities are required to be undertaken within 200 m of land, and within an SAC with a seal qualifying feature, SSEN Transmission will ensure that nearshore vessel-based survey operations are undertaken outwith the breeding or moulting season (as detailed in Section 5.1.5 (M5)). Furthermore, all survey vessels undertaking survey activities will adhere to the provisions of the SMWWC (as detailed further in Section 5).

There is the potential for disturbance at-sea to harbour seals from underwater sound associated with the survey activities. The auditory bandwidth of harbour seals ranges from 75 Hz to 100 kHz (Table 3-3). The sound modelling results for injury (Table 3-6) summarise that the injury range for seals are between 1 m and 44 m for a moving animal, depending on the activity and equipment used. The results for UHRS with a frequency of 6 kHz has the largest injury range for seals. As detailed in Section 5, the JNCC marine mammal mitigation protocols will be applied for seals, and as such the proposed survey activities will not present a risk of injury to seals.

The timing of the surveys may overlap with the breeding and moulting periods for harbour seals, when they are particularly sensitive to disturbance. However, due to the short-term, temporary, and mobile nature of the survey activities, only a small number of individuals are expected to be affected at any given time. Seals are highly mobile and unlikely to remain in areas of elevated underwater sound for extended periods, which further reduces the likelihood of significant disturbance. Studies have shown that even in response to intense noise sources like pile driving, seals tend to return to the area once the activity stops (Russell *et al.*, 2016). Given that the proposed surveys will generate much lower sound levels, any disturbance is expected to be brief and reversible.

With the proposed mitigation measures in place (as outlined in Section 5), and considering the temporary nature of the surveys and the existing vessel traffic in the area, the risk of adverse impacts to hauled-out seals onshore is considered to be low. Furthermore, the mitigation will also prevent injury and reduce disturbance to seals at sea. Any disturbance that does occur is expected to be highly localised, transient and temporary.

It is concluded that there will be no AEoSI or adverse effects to the Conservation Objectives of the Yell Sound Coast SAC, Sanday SAC or the Mousa SAC.

4.2.3 SPAs and NCMPAs (Including SSSIs and Ramsar) with Birds and Qualifying Features

Two SPAs directly overlap the AoI, including:

- Moray Firth SPA; and
  - This site is designated for the conservation of a breeding colony of shag and non-breeding colonies of common scoter, eider, goldeneye, great northern diver, long-tailed duck, red-breasted merganser, red-throated diver, scaup, shag, Slavonian grebe and velvet scoter.
- Seas off Foula SPA.
  - This site is designated for the conservation of breeding colonies of arctic skua, fulmar, great skua, guillemot, puffin, and seabird assemblage, and non-breeding colonies of fulmar, great skua, guillemot and seabird assemblage.

Additionally, there are two SPAs within the connectivity range of 2 km:

- Ramna Stacks and Gruney SPA / SSSI; and
  - This site is designated for the conservation of a breeding colony of Leach's petrel.
- Ronas Hill – North Roe and Tingon SPA/Ramsar/SSSI;
  - This site is designated for the conservation of a breeding colony of great skua and red-throated diver.

The physical presence of survey vessels has the potential to result in direct disturbance and displacement of birds. Furthermore, artificial lighting associated with survey vessels has the potential to result in disorientation to birds, increasing the potential risk of night-time collision with vessels (which may be fatal) (Rodriguez *et al.*, 2015). While a single disturbance event is unlikely to result in the survival or breeding success of an individual bird, repeated disturbance events over a period of time could result in a cumulative effect.

The survey activities are anticipated to be highly localised, short-term and transient in nature, with any potential disturbance effects associated with the physical presence of survey vessels or artificial lighting confined to the immediate area around the survey vessels. The duration of geophysical survey activities in 2026 will be up to 110 days (71 days within Scottish Territorial waters, and 39 days in Offshore waters), with a total of 100 days per year for each of the following 4 years until 2030, split between Territorial and Offshore waters). The survey vessels within the AoI will be slow moving (i.e. up to 6 knots), following pre-determined survey lines within the survey corridor. It is assumed there may be up to two geophysical survey vessels operating in the AoI including an offshore geophysical survey vessel and a nearshore geophysical, however these will not be co-located within the zone of influence of any SPA at any one time. Given existing shipping and navigation operations within the Survey Area, the physical presence of a single survey vessel is not considered to represent a material increase in disturbance due to vessel presence, in the context of baseline vessel traffic activity in the AoI.

The limited spatial and temporal extent of the survey activities also minimises the likelihood of disturbance at key breeding or non-breeding sites for the SPA qualifying species.

A series of mitigation measures (as detailed in Section 5.2) are proposed to reduce the potential for localised disturbance. These measures include limiting the speed of survey vessels to a maximum speed of 6 knots during survey operations (to allow any rafting seabirds time to disperse before the vessel arrives), ensuring vessel lighting is directed or shielded to prevent upward illumination and minimise disturbance and also using blackout blinds and/or curtains where possible when working in marine SPAs or NCMPAs designated for birds. Furthermore, all Project vessels will adhere to the provisions of the SMWWC.

With consideration given to the mitigation measures identified above, it is concluded that there will be no AEoSI or adverse effects to the conservation objectives of the identified SPAs screened into this assessment.

4.2.4 SACs and SSSIs with Otters as Qualifying Features

There is one SAC and SSSI designated for otters within 500 m of the AoI: Yell Sound Coast SAC and SSSI.

Survey activities within the nearshore environment have the potential to result in a disturbance to otters. Otters are largely a terrestrial species, with evidence suggesting that animals occur mainly landwards of the 10 m depth contour. Otters are not generally considered highly sensitive to underwater sound emissions. While otters can detect underwater sound, their hearing appears to be primarily air adapted and not specialised for detecting signals in background noise (Ghoul and Reichmuth, 2016).

The survey activities will be highly localised, temporary and transient in nature. The duration of survey activities that will occur within the coastal environment of the Yell Sound Coast SAC will be further limited. Furthermore, no indicative landfall areas are within 500 m of the Yell Sound Coast SAC, hence coastal survey activities within designated sites with otter as a qualifying feature is not anticipated. Considering the temporary nature of the survey activities in the coastal environment and the existing vessel traffic already present in the region, impacts on otters resulting from the presence of the survey vessels are expected to be extremely limited. As such it is considered that there is no potential for AEoSI or adverse effects to the conservation objectives of the Yell Sound Coast SAC. As detailed in Section 5.3 a series of mitigation measures, including otter monitoring and the implementation of an otter mitigation zone will be applied throughout the survey activities, as required.

4.3 In-combination Effects

As mentioned in Section 3.6, there are assets located within or close to the AoI which have the potential to result in-combination effects on the qualifying features of the protected sites identified within Section 4.1 above. However, any disturbance to these features is expected to be highly localised and temporal in nature. Consequently, proposed survey activities are not anticipated to significantly increase the likelihood of LSE on identified designated sites or increase the risk of affecting, other than insignificantly, the achievement of the conservation objectives of any NCMPAs. Therefore, no in-combination effects are anticipated.

4.4 Conclusion

The following protected sites within potential connectivity of the AoI have been screened into the assessment:

- Southern Trench NCMPA – within 50 km for cetaceans (minke whale) (direct overlap);
- Yell Sound Coast SAC / SSSI – within 50 km for harbour seal and within 500 m for otter (< 0.1 km);
- Sanday SAC – within 50 km for harbour seal;
- Moray Firth SAC – within 50 km for cetaceans (bottlenose dolphin);
- Mousa SAC – within 50 km for harbour seal;
- Moray Firth SPA – within 2 km for breeding and non-breeding populations (direct overlap);
- Seas Off Foula SPA – within 2 km for breeding and non-breeding populations (direct overlap);
- Ramna Stacks and Gruney SPA / SSSI – within 2 km for breeding populations; and
- Ronas Hill - North Roe and Tingon SPA / SSSI / Ramsar – within 2 km for breeding populations.

Due to the temporary and localised nature of the survey activities within the overall survey window, no AEoSI are anticipated for any SAC or SPA and the survey works are not anticipated to hinder the achievement of the

Conservation Objectives of any NCMPA, with no potential for significant in-combination effects expected. Mitigation measures will be implemented to reduce the potential impacts on qualifying features of protected sites, as detailed in Section 5.

The proposed survey operations are required to facilitate the progression of the development of the Project. Hence, the survey activities constitute work of an overriding public need whilst presenting a trivial and temporary disturbance in a limited area.

5 SPECIES PROTECTION MEASURES

This section outlines the proposed mitigation measures that will be implemented for avoiding and reducing potential impacts on EPS and protected species that may be present within the vicinity of the survey activities.

Species and task-specific mitigation measures are provided below, however the following mitigation measures will be implemented to all survey activities:

- All Project vessels will adhere to the provisions of the SMWWC (NatureScot, 2017a), Basking Shark Code of Conduct (Shark Trust, 2024) and Guide to Best Practice for Watching Marine Wildlife (NatureScot, 2017b);
- If the SBP or UHRS is deployed on an uncrewed surface vessel or other autonomous vehicle, the mitigation measures outlined below will be conducted from a support vessel or suitable vantage point on land; and
- Survey crews will be made aware of all protected species within the marine environment, and their responsibility to implement the mitigation measures identified within this document.

5.1 Marine Mammals

A Marine Mammal Protection Plan (MMPP) will be developed to reduce the risk of injury and disturbance to marine mammals during SBP and UHRS survey operations. This plan will align with the JNCC guidelines for reducing the risk of injury from geophysical surveys (JNCC, 2017) and will comply with the latest version of the guidelines (i.e., the Draft JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, February 2025)).

As the equipment used cannot perform a soft-start, this procedure will not be included in the plan.

The MMPP for SBP and UHRS operations will include the following key measures:

- Deployment of an MMO to monitor for the presence of cetaceans and seals, prior to the commencement of SBP and UHRS operations;
- For SBP and UHRS operations during hours of darkness and/or in periods of poor visibility and/or during periods when the sea state is greater than Beaufort 3, deployment of Passive Acoustic Monitoring (PAM) system to detect for the presence of cetaceans that cannot be detected by the MMO;
- 500 m mitigation zone for cetaceans and seals. If UHRS at 0.1 kHz is operated this will be increased to 600 m;
- The mitigation zone will be centred on the sound source, e.g., if the SBP or UHRS equipment is deployed on a remote or towed vehicle, the vehicle will be the centre of the mitigation zone, not the survey vessel;
- The mitigation zone for seals will be reduced to 200 m in the event of a need to avoid critical delay to the project and will be agreed with MD-LOT; and
- Reporting of survey activities and marine mammal sightings.

5.1.1 M1 – Marine Mammal Observer (MMO)

There will be MMOs present for the duration of SBP and UHRS operations, by adequately trained and experienced MMO(s) working standard 12-hour shifts. They will have experience of working at sea and will have successfully deployed and used PAM equipment previously and be equipped with binoculars offering at least 8x magnification. The MMO will be located at a high point on the survey vessel, providing good all-round visibility.

5.1.2 M2 – Marine Mammal Monitoring

During daylight hours the MMO(s) will carry out visual observations to monitor the presence of cetaceans and seals prior to the commencement of any SBP or UHRS survey operations. Should a marine mammal be observed within the 500 m mitigation zone, the MMO(s) will recommend delays in the commencement of the operation. If UHRS is being operated at 0.1 kHz, this mitigation zone will be increased to 600 m.

The mitigation zone for seals may be reduced to 200 m in the event of a need to avoid critical delay in the Project, subject to agreement with MD-LOT.

5.1.3 M3 – Passive Acoustic Monitoring (PAM)

If SBP and UHRS operations are required during periods of low visibility (i.e., due to fog or during hours of darkness) and/or during periods when the sea state is greater than Beaufort 3, the PAM system will be operated by a single MMO/PAM operator. PAM watches will be conducted in line with the JNCC guidance (JNCC, 2023). The PAM system will comprise at least 3 hydrophone elements, allowing for directional localisation of detections, together with software allowing real time automated detection of marine mammal vocalisations (e.g., PAMGuard or equivalent).

5.1.4 M4 – Pre-start Search

Visual (MMO) (and acoustic (PAM) if required) monitoring will be conducted for a pre-start search of a minimum of 30 minutes prior to the commencement of UHRS and SBP survey operations. This will involve a visual search (during daylight hours) or PAM watch (during poor visibility or at night) to determine whether any cetacean or seal is present within the mitigation zone (as defined in Section 5.1.2).

5.1.5 M5 – Harbour Seal SACs

During hours of darkness or in conditions of poor visibility – when the MMO is unable to visually monitor for seals – SBP and UHRS equipment must not be deployed or activated within 100 m of any SAC designated for harbour seals. In such cases, the equipment must be started outside this 100 m buffer, and the vessel may then move into position once the equipment is operational.

When survey activities are conducted within SAC designated for harbour seals, SSEN Transmission will ensure that nearshore vessel-based SBP and UHRS surveys within 200 m of land are scheduled outside of the breeding and moulting seasons for harbour seals. The restricted periods are as follows:

- Breeding and moulting season: 15 June – 31 August (inclusive)

However, if the MMO confirms that no harbour seals are hauled out onshore within a SAC – and therefore would not be within 200 m of the vessel – these seasonal restrictions will not apply. In such cases, intertidal and nearshore survey operations may proceed.

5.1.6 M6 – Reporting

During SBP and UHRS survey campaign, all sightings or cetaceans and seals will be recorded using JNCC Standard Forms. At the end of the operations, a monitoring report detailing cetaceans sighted, methods used to detect them, and detail of any problems encountered during the survey campaign will be submitted to MD-LOT and JNCC. The report will also include feedback on how successful the implementation of mitigation measures was. This requirement will be communicated to the MMOs at project start up meetings and at crew changes.

5.2 Seabirds

The following mitigation measure will be implemented in order to reduce disturbance to seabirds.

5.2.1 M7 – Rafting Seabirds

Project survey vessels will be moving at a maximum speed of 6 knots during survey operations, to allow any rafting seabirds time to disperse before the vessel arrives. When not on survey effort, vessels will avoid bird rafts where operationally possible and it is safe to do so.

5.2.2 M8 – Light Disturbance

When survey operations are taking place within an SPA, and where there is potential for 24-hour working, the following measures will be implemented to minimise the potential impacts to birds:

- Lighting on-board the survey vessels will be kept to the minimum level required to ensure safe operations;
- Lights will be directed or shielded to prevent upward illumination and minimise disturbance; and
- Blackout blinds and/or curtains will be used where possible when working in marine SPAs.

5.3 Otters

As outlined in Section 4.2.4, there are two sites designated for the conservation of otters within 500 m of the AoI. However, due to the mobile nature of otters, the following mitigation measures will be implemented in order to reduce potential disturbance to otters.

5.3.1 M9 – Otter Monitoring

For the duration of SBP and UHRS survey operations there will be vessel based MMO coverage by an adequately trained and experience MMO(s) working standard 12-hour shifts. The MMO will also monitor for the presence of otters using the approach to marine mammal monitoring outlined in Section 5.1.2.

5.3.2 M10 – Otter Mitigation Zone

When conducting vessel based SBP and UHRS surveys the MMO will monitor for the presence of otters in the water, in addition to marine mammals, and will delay the start of the survey if any are seen within 200 m of the survey vessel.

6 CONCLUSION

This EPS and Protected Species Risk Assessment has been produced to assess the risk of proposed survey activities (including equipment calibration) to EPS, other protected species and protected sites. This included assessing the risk associated with underwater sound emitted from survey equipment and survey vessels, collision risk with Project vessels and disturbance to the following receptors:

- Cetaceans;
- Seals;
- Birds;
- Otters;
- Basking sharks;
- Protected sites with the above listed species as a qualifying feature; and
- Designated seal haul-outs and seal breeding sites.

This assessment has concluded that the nature of the survey activities, in combination with the proposed mitigation, means that no adverse impact through injury to EPS is anticipated, and an EPS Licence is not required in this regard. However, the use of SBP and UHRS equipment may cause disturbance to cetaceans, and as such, an application for an EPS Licence for disturbance of EPS will be sought by SSEN Transmission. In addition, although unlikely, there remains a risk of disturbance to basking sharks resulting from vessel presence, and therefore a Basking Shark Derogation Licence will also be sought.

The Area overlaps with several protected sites. However, due to the temporary and localised nature of the survey activities, long-term impacts to the qualifying interests of these protected sites will not be significant. A number of mitigation strategies will also be followed to further reduce any potential impacts (see Section 5). Therefore, there will be no AEoSI for any European site and the survey activities will not pose a risk of affecting, other than insignificantly, the achievement of the conservation objectives of any NCMPA.

Overall, the proposed survey operations constitute work of an overriding public need while presenting a trivial and temporary disturbance in a limited area over a limited time period.

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APPENDIX A AREA OF INTEREST COORDINATES

A figure illustrating the simplified corridor areas is presented in Figure A-1 below, with the coordinates detailed in Table A-1.

Figure A-1 Simplified Corridor Areas (Inshore and Offshore) in the AoI

Table A-1 AoI Coordinates

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
The AoI has been simplified to reduce the number of coordinates. For the avoidance of doubt, in the indicative landfall areas the landward boundary of the AoI is defined by MHWS.							
Offshore	G	57° 52' 56.42 N	2° 30' 40.93 W	57° 52.94' N	2° 30.682' W	57.88233834	-2.511369657
Offshore	G	57° 53' 5.67 N	2° 34' 16.79 W	57° 53.094' N	2° 34.28' W	57.88490697	-2.571331913
Offshore	G	57° 55' 46.92 N	2° 31' 28.5 W	57° 55.782' N	2° 31.475' W	57.92969933	-2.524582588
Offshore	G	57° 59' 49.19 N	2° 23' 58.1 W	57° 59.82' N	2° 23.968' W	57.99699669	-2.399472625
Offshore	G	58° 2' 27.43 N	2° 21' 47.79 W	58° 2.457' N	2° 21.796' W	58.04095305	-2.36327416
Offshore	G	58° 4' 39.54 N	2° 17' 17.51 W	58° 4.659' N	2° 17.292' W	58.07764893	-2.288196946
Offshore	G	58° 7' 28.11 N	2° 14' 14.2 W	58° 7.468' N	2° 14.237' W	58.12447449	-2.237278879
Offshore	G	58° 9' 17.02 N	2° 14' 32.83 W	58° 9.284' N	2° 14.547' W	58.15472765	-2.242452249
Offshore	G	58° 11' 47.38 N	2° 12' 32.35 W	58° 11.79' N	2° 12.539' W	58.19649379	-2.208985596
Offshore	G	58° 13' 53.59 N	2° 8' 5.11 W	58° 13.893' N	2° 8.085' W	58.23155175	-2.134753572
Offshore	G	58° 15' 42.76 N	2° 6' 1.15 W	58° 15.713' N	2° 6.019' W	58.26187764	-2.10032056
Offshore	G	58° 23' 42.32 N	1° 59' 7.13 W	58° 23.705' N	1° 59.119' W	58.39508784	-1.985314696
Offshore	G	58° 31' 39.66 N	1° 54' 56.25 W	58° 31.661' N	1° 54.937' W	58.52768216	-1.915623785
Offshore	G	58° 40' 54.54 N	1° 53' 0.49 W	58° 40.909' N	1° 53.008' W	58.68181595	-1.883470385
Offshore	G	58° 50' 46.18 N	1° 55' 9.81 W	58° 50.77' N	1° 55.163' W	58.84615988	-1.919390878
Offshore	G	58° 54' 1.37 N	1° 55' 10.93 W	58° 54.023' N	1° 55.182' W	58.90038013	-1.91970314
Offshore	G	59° 7' 33.25 N	1° 50' 21.71 W	59° 7.554' N	1° 50.362' W	59.12590256	-1.839364378
Offshore	G	59° 18' 17.06 N	1° 54' 36.08 W	59° 18.284' N	1° 54.601' W	59.30473755	-1.910021333
Offshore	G	59° 19' 16.56 N	1° 55' 47.49 W	59° 19.276' N	1° 55.792' W	59.32126743	-1.929858685
Offshore	G	59° 23' 0.53 N	1° 57' 34.88 W	59° 23.009' N	1° 57.581' W	59.38347973	-1.959688721
Offshore	G	59° 20' 51.78 N	1° 53' 16.77 W	59° 20.863' N	1° 53.28' W	59.34771707	-1.88799181
Offshore	G	59° 18' 49.08 N	1° 51' 36.32 W	59° 18.818' N	1° 51.605' W	59.31363345	-1.860089917
Offshore	G	59° 7' 39.01 N	1° 47' 8.79 W	59° 7.65' N	1° 47.146' W	59.12750407	-1.78577423
Offshore	G	58° 53' 55.57 N	1° 52' 3.9 W	58° 53.926' N	1° 52.065' W	58.8987686	-1.86775048

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Offshore	G	58° 40' 54.38 N	1° 49' 54.3 W	58° 40.906' N	1° 49.905' W	58.68177216	-1.831749617
Offshore	G	58° 31' 20.37 N	1° 51' 54.59 W	58° 31.339' N	1° 51.91' W	58.52232469	-1.865163276
Offshore	G	58° 23' 5.08 N	1° 56' 16.64 W	58° 23.085' N	1° 56.277' W	58.38474387	-1.937955112
Offshore	G	58° 14' 54.46 N	2° 3' 21.64 W	58° 14.908' N	2° 3.361' W	58.24846042	-2.056010067
Offshore	G	58° 12' 49.79 N	2° 5' 45.65 W	58° 12.83' N	2° 5.761' W	58.21383033	-2.096012863
Offshore	G	58° 10' 58.98 N	2° 9' 50.1 W	58° 10.983' N	2° 9.835' W	58.18305046	-2.163917543
Offshore	G	58° 8' 54.91 N	2° 11' 33.87 W	58° 8.915' N	2° 11.565' W	58.14858504	-2.192742995
Offshore	G	58° 6' 43.61 N	2° 11' 28.69 W	58° 6.727' N	2° 11.478' W	58.11211313	-2.19130278
Offshore	G	58° 3' 37.83 N	2° 14' 56.06 W	58° 3.63' N	2° 14.934' W	58.06050725	-2.248905796
Offshore	G	58° 1' 30.01 N	2° 19' 19.71 W	58° 1.5' N	2° 19.328' W	58.02500374	-2.322141519
Offshore	G	57° 58' 50.04 N	2° 21' 33.1 W	57° 58.834' N	2° 21.552' W	57.98056692	-2.359193982
Offshore	G	57° 54' 46.95 N	2° 29' 5.04 W	57° 54.783' N	2° 29.084' W	57.91304222	-2.484732943
Offshore	G	57° 52' 56.42 N	2° 30' 40.93 W	57° 52.94' N	2° 30.682' W	57.88233834	-2.511369657
Inshore	A	60° 34' 55.27 N	2° 0' 13.54 W	60° 34.921' N	2° 0.226' W	60.58202033	-2.003760827
Inshore	A	60° 37' 32.96 N	1° 58' 36.95 W	60° 37.549' N	1° 58.616' W	60.62582088	-1.976931055
Inshore	A	60° 41' 55.93 N	1° 46' 48.93 W	60° 41.932' N	1° 46.816' W	60.69887021	-1.780258526
Inshore	A	60° 44' 36.37 N	1° 29' 4.7 W	60° 44.606' N	1° 29.078' W	60.74343713	-1.484638875
Inshore	A	60° 45' 0.49 N	1° 20' 51.41 W	60° 45.008' N	1° 20.857' W	60.75013705	-1.347614555
Inshore	A	60° 44' 8.95 N	1° 17' 23.77 W	60° 44.149' N	1° 17.396' W	60.73581997	-1.28993523
Inshore	A	60° 42' 44.13 N	1° 15' 19.66 W	60° 42.736' N	1° 15.328' W	60.71225873	-1.255461701
Inshore	A	60° 39' 9.15 N	1° 14' 22.05 W	60° 39.153' N	1° 14.367' W	60.65254173	-1.239457269
Inshore	A	60° 33' 17.72 N	1° 16' 14.61 W	60° 33.295' N	1° 16.244' W	60.55492259	-1.270725899
Inshore	A	60° 32' 8.77 N	1° 15' 49.88 W	60° 32.146' N	1° 15.831' W	60.53577047	-1.263856136
Inshore	A	60° 29' 39.39 N	1° 11' 49.93 W	60° 29.657' N	1° 11.832' W	60.49427502	-1.197202357
Inshore	A	60° 28' 4.36 N	1° 10' 39.76 W	60° 28.073' N	1° 10.663' W	60.46787894	-1.177712179
Inshore	A	60° 27' 22.98 N	1° 12' 29.6 W	60° 27.383' N	1° 12.493' W	60.45638389	-1.20822135
Inshore	A	60° 29' 26.47 N	1° 12' 38.47 W	60° 29.441' N	1° 12.641' W	60.4906863	-1.210687361

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Inshore	A	60° 31' 47.77 N	1° 17' 19.95 W	60° 31.796' N	1° 17.333' W	60.5299371	-1.288875963
Inshore	A	60° 30' 56.33 N	1° 18' 32.48 W	60° 30.939' N	1° 18.541' W	60.51564587	-1.309021111
Inshore	A	60° 31' 12.51 N	1° 21' 6.34 W	60° 31.209' N	1° 21.106' W	60.52014276	-1.351761235
Inshore	A	60° 31' 24.06 N	1° 19' 35.46 W	60° 31.401' N	1° 19.591' W	60.5233487	-1.326515365
Inshore	A	60° 32' 33.19 N	1° 18' 18.63 W	60° 32.553' N	1° 18.311' W	60.54255183	-1.305176046
Inshore	A	60° 37' 38.39 N	1° 17' 15.5 W	60° 37.64' N	1° 17.258' W	60.62732987	-1.287639602
Inshore	A	60° 42' 12.36 N	1° 18' 29.79 W	60° 42.206' N	1° 18.497' W	60.70343414	-1.308276129
Inshore	A	60° 43' 24.46 N	1° 21' 39.86 W	60° 43.408' N	1° 21.664' W	60.7234615	-1.361072983
Inshore	A	60° 43' 2.07 N	1° 28' 18.69 W	60° 43.034' N	1° 28.311' W	60.71724121	-1.471858303
Inshore	A	60° 40' 29.41 N	1° 45' 16.73 W	60° 40.49' N	1° 45.279' W	60.6748375	-1.754647432
Inshore	A	60° 34' 55.27 N	2° 0' 13.54 W	60° 34.921' N	2° 0.226' W	60.58202033	-2.003760827
Offshore	B	60° 32' 7.89 N	2° 3' 55.48 W	60° 32.132' N	2° 3.925' W	60.53552588	-2.065411006
Offshore	B	60° 29' 55.78 N	2° 8' 20.43 W	60° 29.93' N	2° 8.34' W	60.4988281	-2.139007
Offshore	B	60° 26' 54.74 N	2° 11' 55.94 W	60° 26.912' N	2° 11.932' W	60.4485384	-2.1988725
Offshore	B	60° 23' 59.44 N	2° 13' 39.39 W	60° 23.991' N	2° 13.656' W	60.3998435	-2.2276074
Offshore	B	60° 20' 54.12 N	2° 13' 49.94 W	60° 20.902' N	2° 13.832' W	60.34836703	-2.23053904
Offshore	B	60° 19' 23.39 N	2° 18' 41.21 W	60° 19.39' N	2° 18.687' W	60.32316412	-2.311447482
Offshore	B	60° 29' 7.08 N	2° 10' 53.72 W	60° 29.118' N	2° 10.895' W	60.48529899	-2.181588825
Offshore	B	60° 35' 22.42 N	2° 4' 8.62 W	60° 35.374' N	2° 4.144' W	60.58956227	-2.069061631
Offshore	B	60° 37' 32.96 N	1° 58' 36.95 W	60° 37.549' N	1° 58.616' W	60.62582088	-1.976931055
Offshore	B	60° 34' 55.27 N	2° 0' 13.54 W	60° 34.921' N	2° 0.226' W	60.58202033	-2.003760827
Offshore	B	60° 32' 7.89 N	2° 3' 55.48 W	60° 32.132' N	2° 3.925' W	60.53552588	-2.065411006
Inshore	C	60° 20' 54.12 N	2° 13' 49.94 W	60° 20.902' N	2° 13.832' W	60.34836703	-2.23053904
Inshore	C	60° 23' 59.44 N	2° 13' 39.39 W	60° 23.991' N	2° 13.656' W	60.3998435	-2.2276074
Inshore	C	60° 26' 54.74 N	2° 11' 55.94 W	60° 26.912' N	2° 11.932' W	60.4485384	-2.1988725
Inshore	C	60° 29' 55.78 N	2° 8' 20.43 W	60° 29.93' N	2° 8.34' W	60.4988281	-2.139007
Inshore	C	60° 32' 7.89 N	2° 3' 55.48 W	60° 32.132' N	2° 3.925' W	60.53552588	-2.065411006

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Inshore	C	60° 23' 43.15 N	2° 11' 42.69 W	60° 23.719' N	2° 11.712' W	60.395319	-2.195192564
Inshore	C	60° 26' 50.76 N	1° 50' 9.4 W	60° 26.846' N	1° 50.157' W	60.44743404	-1.835945409
Inshore	C	60° 26' 59.56 N	1° 43' 11.79 W	60° 26.993' N	1° 43.196' W	60.44987883	-1.719940451
Inshore	C	60° 26' 6.65 N	1° 38' 19.85 W	60° 26.111' N	1° 38.331' W	60.43518038	-1.63884831
Inshore	C	60° 26' 54.74 N	1° 35' 57.57 W	60° 26.912' N	1° 35.96' W	60.44853835	-1.599325854
Inshore	C	60° 27' 54.47 N	1° 35' 34.85 W	60° 27.908' N	1° 35.581' W	60.46513131	-1.593013768
Inshore	C	60° 29' 26.66 N	1° 33' 10.92 W	60° 29.444' N	1° 33.182' W	60.490738	-1.553032133
Inshore	C	60° 28' 45.69 N	1° 32' 15.11 W	60° 28.761' N	1° 32.252' W	60.47935738	-1.537529686
Inshore	C	60° 29' 5.06 N	1° 30' 0.35 W	60° 29.084' N	1° 30.006' W	60.48473952	-1.500097284
Inshore	C	60° 28' 37.54 N	1° 29' 36.06 W	60° 28.626' N	1° 29.601' W	60.47709392	-1.493349403
Inshore	C	60° 27' 30.56 N	1° 32' 24.06 W	60° 27.509' N	1° 32.401' W	60.45848803	-1.540016892
Inshore	C	60° 25' 45.27 N	1° 33' 38.8 W	60° 25.755' N	1° 33.647' W	60.4292422	-1.560776516
Inshore	C	60° 24' 43.02 N	1° 30' 54.88 W	60° 24.717' N	1° 30.915' W	60.41195124	-1.515243641
Inshore	C	60° 25' 7.81 N	1° 28' 5.17 W	60° 25.13' N	1° 28.086' W	60.41883493	-1.468103425
Inshore	C	60° 23' 51.92 N	1° 23' 7.53 W	60° 23.865' N	1° 23.126' W	60.39775438	-1.385425931
Inshore	C	60° 23' 6.03 N	1° 28' 55.06 W	60° 23.101' N	1° 28.918' W	60.38500951	-1.481961015
Inshore	C	60° 21' 9.86 N	1° 27' 49.27 W	60° 21.164' N	1° 27.821' W	60.35273848	-1.463685064
Inshore	C	60° 20' 30.87 N	1° 25' 38.4 W	60° 20.514' N	1° 25.64' W	60.34190812	-1.427333995
Inshore	C	60° 21' 20.45 N	1° 23' 0.3 W	60° 21.341' N	1° 23.005' W	60.35568021	-1.383416551
Inshore	C	60° 22' 21.59 N	1° 22' 14.66 W	60° 22.36' N	1° 22.244' W	60.37266408	-1.370740197
Inshore	C	60° 22' 7.27 N	1° 21' 19.73 W	60° 22.121' N	1° 21.329' W	60.36868474	-1.355479579
Inshore	C	60° 20' 59.05 N	1° 22' 11.13 W	60° 20.984' N	1° 22.186' W	60.34973587	-1.369758556
Inshore	C	60° 19' 59.57 N	1° 25' 21.69 W	60° 19.993' N	1° 25.362' W	60.33321314	-1.422691993
Inshore	C	60° 20' 38.65 N	1° 28' 19.72 W	60° 20.644' N	1° 28.329' W	60.34407039	-1.472143118
Inshore	C	60° 20' 22.87 N	1° 30' 9.11 W	60° 20.381' N	1° 30.152' W	60.33968705	-1.50253184
Inshore	C	60° 21' 8.19 N	1° 31' 55.16 W	60° 21.136' N	1° 31.919' W	60.35227407	-1.531988674
Inshore	C	60° 23' 15.71 N	1° 32' 27.55 W	60° 23.262' N	1° 32.459' W	60.38769824	-1.540985385

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Inshore	C	60° 24' 14.37 N	1° 34' 57.62 W	60° 24.24' N	1° 34.96' W	60.40399185	-1.582672432
Inshore	C	60° 24' 26.54 N	1° 38' 39.11 W	60° 24.442' N	1° 38.652' W	60.40737327	-1.64419851
Inshore	C	60° 25' 22.63 N	1° 43' 39.07 W	60° 25.377' N	1° 43.651' W	60.42295224	-1.727520656
Inshore	C	60° 25' 14.73 N	1° 49' 41.21 W	60° 25.245' N	1° 49.687' W	60.42075814	-1.828112916
Inshore	C	60° 21' 57.46 N	2° 12' 10.96 W	60° 21.958' N	2° 12.183' W	60.3659617	-2.203044995
Inshore	C	60° 20' 54.12 N	2° 13' 49.94 W	60° 20.902' N	2° 13.832' W	60.34836703	-2.23053904
Inshore	D	59° 55' 31.93 N	2° 13' 13.04 W	59° 55.532' N	2° 13.217' W	59.925536	-2.220289195
Inshore	D	59° 58' 0.65 N	2° 20' 41.89 W	59° 58.011' N	2° 20.698' W	59.96684691	-2.344970481
Inshore	D	60° 3' 45.17 N	2° 28' 51.98 W	60° 3.753' N	2° 28.866' W	60.06254634	-2.481106582
Inshore	D	60° 5' 2.04 N	2° 29' 15.43 W	60° 5.034' N	2° 29.257' W	60.08389964	-2.487619802
Inshore	D	60° 13' 7.99 N	2° 24' 22.35 W	60° 13.133' N	2° 24.373' W	60.21888515	-2.406209076
Inshore	D	60° 19' 23.39 N	2° 18' 41.21 W	60° 19.39' N	2° 18.687' W	60.32316412	-2.311447482
Inshore	D	60° 20' 34.6 N	2° 14' 13.9 W	60° 20.577' N	2° 14.232' W	60.34294415	-2.237193113
Inshore	D	60° 12' 32.7 N	2° 21' 20.17 W	60° 12.545' N	2° 21.336' W	60.20908471	-2.355602065
Inshore	D	60° 5' 0.64 N	2° 26' 0.52 W	60° 5.011' N	2° 26.009' W	60.08351138	-2.43347903
Inshore	D	59° 55' 31.93 N	2° 13' 13.04 W	59° 55.532' N	2° 13.217' W	59.925536	-2.220289195
Offshore	E	59° 43' 14.02 N	1° 51' 14.06 W	59° 43.234' N	1° 51.234' W	59.72056048	-1.853904769
Offshore	E	59° 42' 15.03 N	1° 53' 50.24 W	59° 42.251' N	1° 53.837' W	59.70417532	-1.897287702
Offshore	E	59° 45' 58.17 N	1° 59' 20.29 W	59° 45.969' N	1° 59.338' W	59.76615746	-1.988968226
Offshore	E	59° 49' 58.17 N	2° 8' 9.42 W	59° 49.97' N	2° 8.157' W	59.83282583	-2.135950383
Offshore	E	59° 58' 0.65 N	2° 20' 41.89 W	59° 58.011' N	2° 20.698' W	59.96684691	-2.344970481
Offshore	E	59° 55' 31.93 N	2° 13' 13.04 W	59° 55.532' N	2° 13.217' W	59.925536	-2.220289195
Offshore	E	59° 51' 0.81 N	2° 5' 42.34 W	59° 51.013' N	2° 5.706' W	59.8502243	-2.095093092
Offshore	E	59° 47' 2.65 N	1° 56' 56.7 W	59° 47.044' N	1° 56.945' W	59.78406852	-1.9490847
Offshore	E	59° 43' 14.02 N	1° 51' 14.06 W	59° 43.234' N	1° 51.234' W	59.72056048	-1.853904769
Inshore	F	59° 20' 51.78 N	1° 53' 16.77 W	59° 20.863' N	1° 53.28' W	59.34771707	-1.88799181
Inshore	F	59° 22' 52.09 N	1° 57' 21.62 W	59° 22.868' N	1° 57.36' W	59.3811359	-1.956005299

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Inshore	F	59° 23' 42.64 N	1° 57' 47.81 W	59° 23.711' N	1° 57.797' W	59.39517662	-1.963279518
Inshore	F	59° 32' 19.36 N	1° 55' 53.5 W	59° 32.323' N	1° 55.892' W	59.5387105	-1.931529135
Inshore	F	59° 39' 30.51 N	1° 51' 52.57 W	59° 39.508' N	1° 51.876' W	59.65847365	-1.864601986
Inshore	F	59° 41' 4.62 N	1° 52' 24.33 W	59° 41.077' N	1° 52.406' W	59.68461759	-1.8734256
Inshore	F	59° 42' 15.03 N	1° 53' 50.24 W	59° 42.251' N	1° 53.837' W	59.70417532	-1.897287702
Inshore	F	59° 43' 14.02 N	1° 51' 14.06 W	59° 43.234' N	1° 51.234' W	59.72056048	-1.853904769
Inshore	F	59° 41' 29.12 N	1° 49' 14.26 W	59° 41.485' N	1° 49.238' W	59.69142235	-1.820628174
Inshore	F	59° 39' 23.22 N	1° 48' 38.43 W	59° 39.387' N	1° 48.64' W	59.65645102	-1.81067427
Inshore	F	59° 32' 2.21 N	1° 52' 45.55 W	59° 32.037' N	1° 52.759' W	59.53394798	-1.879318501
Inshore	F	59° 28' 49.64 N	1° 53' 44.51 W	59° 28.827' N	1° 53.742' W	59.48045434	-1.895696553
Inshore	F	59° 23' 40.34 N	1° 54' 37.51 W	59° 23.672' N	1° 54.625' W	59.39453863	-1.910420654
Inshore	F	59° 20' 51.78 N	1° 53' 16.77 W	59° 20.863' N	1° 53.28' W	59.34771707	-1.88799181
Inshore	H	57° 52' 56.42 N	2° 30' 40.93 W	57° 52.94' N	2° 30.682' W	57.88233834	-2.511369657
Inshore	H	57° 49' 43.44 N	2° 34' 34.51 W	57° 49.724' N	2° 34.575' W	57.82873462	-2.576251589
Inshore	H	57° 46' 59.42 N	2° 40' 12.36 W	57° 46.99' N	2° 40.206' W	57.78317242	-2.670099312
Inshore	H	57° 45' 31.99 N	2° 39' 13.74 W	57° 45.533' N	2° 39.229' W	57.75888639	-2.653815422
Inshore	H	57° 43' 4.55 N	2° 33' 45.18 W	57° 43.076' N	2° 33.753' W	57.71793034	-2.562549887
Inshore	H	57° 41' 49.29 N	2° 32' 36.93 W	57° 41.822' N	2° 32.616' W	57.69702615	-2.54359174
Inshore	H	57° 40' 20.33 N	2° 32' 51.08 W	57° 40.339' N	2° 32.851' W	57.67231504	-2.547522747
Inshore	H	57° 40' 57.8 N	2° 34' 28.52 W	57° 40.963' N	2° 34.475' W	57.68272186	-2.574588022
Inshore	H	57° 40' 39.08 N	2° 35' 1.48 W	57° 40.651' N	2° 35.025' W	57.67752325	-2.583743453
Inshore	H	57° 40' 50.83 N	2° 37' 29.36 W	57° 40.847' N	2° 37.489' W	57.68078527	-2.624823362
Inshore	H	57° 42' 28.43 N	2° 37' 40.43 W	57° 42.474' N	2° 37.674' W	57.70789703	-2.627896128
Inshore	H	57° 43' 11.63 N	2° 39' 4.51 W	57° 43.194' N	2° 39.075' W	57.71989779	-2.651253202
Inshore	H	57° 41' 55.76 N	2° 42' 4.6 W	57° 41.929' N	2° 42.077' W	57.69882152	-2.701277896
Inshore	H	57° 41' 8.64 N	2° 42' 10.22 W	57° 41.144' N	2° 42.17' W	57.68573204	-2.702839594
Inshore	H	57° 41' 33.61 N	2° 42' 51.5 W	57° 41.56' N	2° 42.858' W	57.69266836	-2.714306303

REGION	AREA	LATITUDE (DMS)	LONGITUDE (DMS)	LATITUDE (DDM)	LONGITUDE (DDM)	LATITUDE (DD)	LONGITUDE (DD)
Inshore	H	57° 40' 57.47 N	2° 44' 51.05 W	57° 40.958' N	2° 44.851' W	57.68262995	-2.747514535
Inshore	H	57° 41' 27.29 N	2° 45' 6.35 W	57° 41.455' N	2° 45.106' W	57.69091349	-2.751764808
Inshore	H	57° 42' 42.46 N	2° 44' 50.49 W	57° 42.708' N	2° 44.842' W	57.71179579	-2.747359142
Inshore	H	57° 44' 9.38 N	2° 41' 41.1 W	57° 44.156' N	2° 41.685' W	57.73593824	-2.694748886
Inshore	H	57° 46' 38.37 N	2° 43' 14.13 W	57° 46.64' N	2° 43.235' W	57.77732605	-2.720590673
Inshore	H	57° 47' 44.08 N	2° 42' 56.37 W	57° 47.735' N	2° 42.939' W	57.79557896	-2.715657334
Inshore	H	57° 50' 46.18 N	2° 36' 53.57 W	57° 50.77' N	2° 36.893' W	57.84616045	-2.614880292
Inshore	H	57° 53' 5.67 N	2° 34' 16.79 W	57° 53.094' N	2° 34.28' W	57.88490697	-2.571331913
Inshore	H	57° 52' 56.42 N	2° 30' 40.93 W	57° 52.94' N	2° 30.682' W	57.88233834	-2.511369657