Scottish & Southern Electricity Networks

TRANSMISSION

Spittal to Peterhead HVDC Cable EPS and Basking Shark Licence Variation: Technical Note

Ref: EPS-00010441 and BS-00010444

Report versions

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Rev 01		[Redacted]		30/10/2023
Rev 02				
Rev 03				
Rev 04				

Contents

1. Introduction

This technical note serves as an addendum to support a licence variation request for the following issued licences:

- A European Protected Species (EPS) licence, EPS-00010441;
- A Basking Shark licence, BS-00010444

A variation in these licences is required because the planned marine survey corridor has been refined to encompass potential subsea cable routes that increase the likelihood of successful cable burial. Of the 165 km refined marine survey corridor, approximately 5.5 km now fall a maximum of 800 m outside of the licensed boundary area. It is requested that the licences be varied to include a modification to the licensed boundary area in order that this 5.5 km section is included. The original and revised EPS and Basking Shark licence boundaries are illustrated in Figure 1.

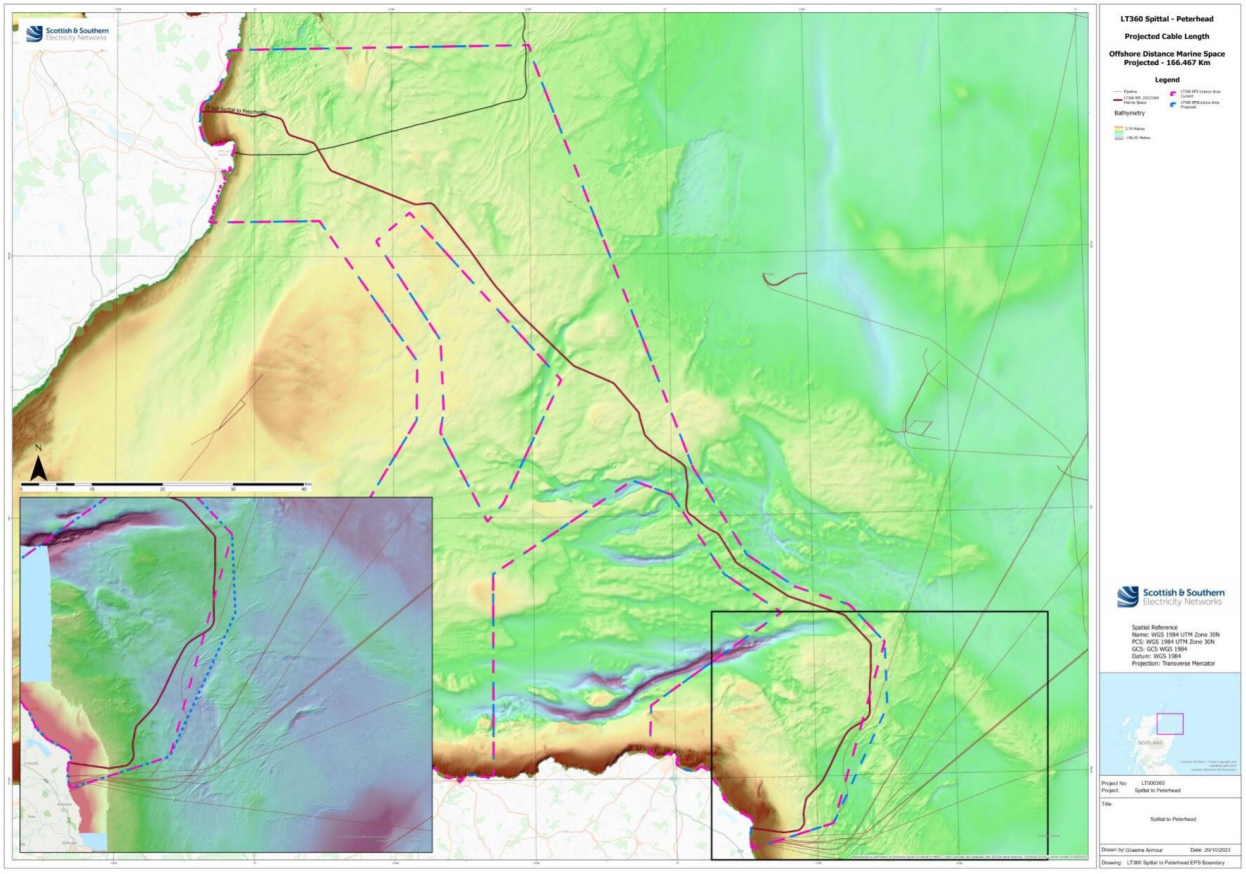

Figure 1: Requested EPS and Basking Shark licence boundary revision. Original boundary (pink dashed line), revised boundary (blue dashed line), and forthcoming Spittal to Peterhead Subsea HVDC cable marine survey route (red line).

This technical note provides justification for the refined marine survey route, requiring a modification to the EPS and Basking Shark licence boundaries. The refined marine survey corridor is 500 m in width; 250 m either side of the centreline illustrated in Figure 1.

Activities to be undertaken within the modified boundary area are the same as those proposed in the original EPS and Basking Shark Risk assessment. This document also describes the negligible impact that this change has on the EPS and Basking Shark Risk assessment submitted alongside EPS-00010441 and BS-00010444 (MarineSpace, 2023). The mitigations proposed to alleviate any likelihood of impact outlined in the EPS and Basking Shark Risk assessment remain the same.

Note that this document refers exclusively to the refinement of the proposed marine survey corridor and modification of the licensed boundary area. Further detail on the overall Marine Scheme, proposed activities, and any other evaluations of project activities are referred to in the original EPS and Basking Shark Risk Assessment (MarineSpace, 2023).

2. Refinement of the marine survey corridor

Burial is the primary method of protection for subsea power cables, and acts as mitigation against hazards including fishing gear interactions, dropped anchor, dragged anchor, and cable exposure by scour (DNV-GL AS, 2016). Sufficient cable burial reduces the need for additional cable protection such rock placement and can also serve to reduce the intensity of DC magnetic fields at the seabed surface (Hutchison *et al*. 2021).

In order to achieve maximum burial and reduce the amount of seabed intervention required to achieve burial, preliminary subsea cable route selection is guided by the Recommended Practice for Subsea Power Cables in Shallow Water, DNVGL-RP-360.

2.1. RECOMMENDED PRACTICE DNVGL-RP-360

The DNVGL-RP-360 notes that the following features may influence the cable route, or the degree of seabed intervention required in order for successful cable lay:

- Obstructions in the form of rock outcrops, boulder fields, etc., that could necessitate levelling or removal operations to be carried out prior to cable installation.
- Geo-hazards such as potentially unstable slopes, sand waves, pock marks, significant depressions, and erosion in the form of scour or material deposits.
- Existing and planned infrastructure such as submarine pipelines, power cables and communication cables, and wrecks.
- Archaeologically or culturally significant findings.
- High-current areas.

2.2. MARINE SURVEY ROUTE REFINEMENT

Following submission of the initial EPS and Basking Shark Licence applications, SSEN Transmission has undertaken a detailed review of the proposed Spittal to Peterhead HVDC subsea cable survey corridor with reference to the UKHO's high resolution bathymetry datasets (all <5 m resolution). Following this review, it was determined that it would be necessary to refine the proposed survey corridor to:

- Avoid seabed features and potential geohazards (difficult ground conditions that could necessitate seabed interventions such as levelling, pre-sweeping, pre-lay dredging or removal of e.g., boulders);
- Reduce the need for pre-installation intervention with the seabed;
- Increase the likelihood of successful burial to depth of the subsea cable; and,
- Reduce the likelihood of requiring cable protection such as rock placement.

Over a 5.5 km section, the refined marine survey corridor falls outside of the originally licensed EPS and Basking Shark Licence boundary areas, as illustrated in Figure 2.

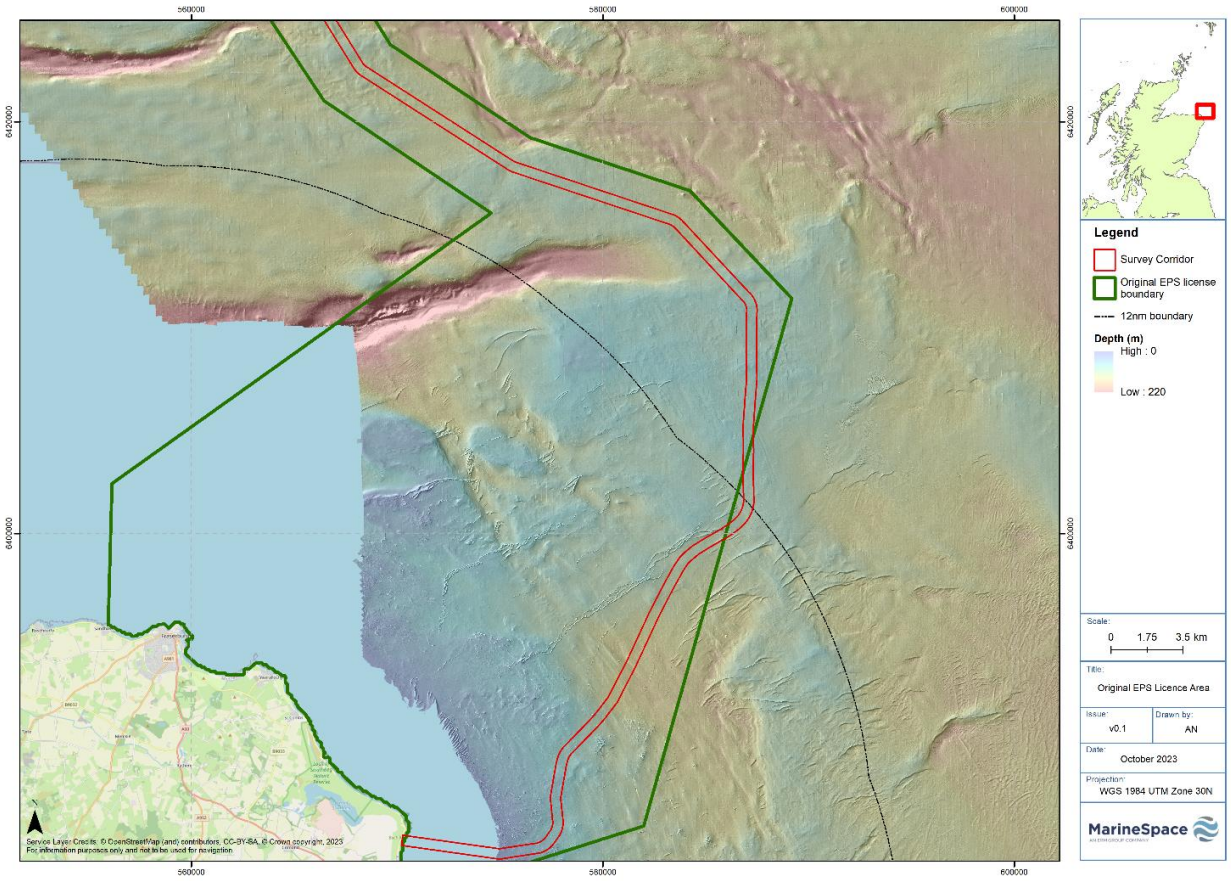

Figure 2: Section of refined Spittal to Peterhead HVDC subsea cable survey corridor falling outside of the licensed boundary (ref: EPS-00010441 and BS-00010444).

The refined marine survey corridor sits approximately 800 m outside of the original EPS and Basking Shark Licence boundary area at approximately the 12 nm limit mark. The reason for subsea cable survey corridor refinement at this location is enable the eventual subsea cable route to avoid sand waves to the west, and a laterally extensive seabed feature running south-west. Figure 3 illustrates these features.

The feature described above could limit successful burial of the subsea cable on installation, so an alternative survey corridor (and eventual cable route) is required. Additionally, the laterally extensive feature would cause the eventual cable route to extend to the north of the identified landfall location and to encounter extensive tidal current activity near the headlands of the coast. These currents create significant, highly mobile seabed features (including large sand waves), which would prevent the use of subsea trenching equipment (and successful cable burial) without extensive seabed intervention such as dredging (Figure 4).

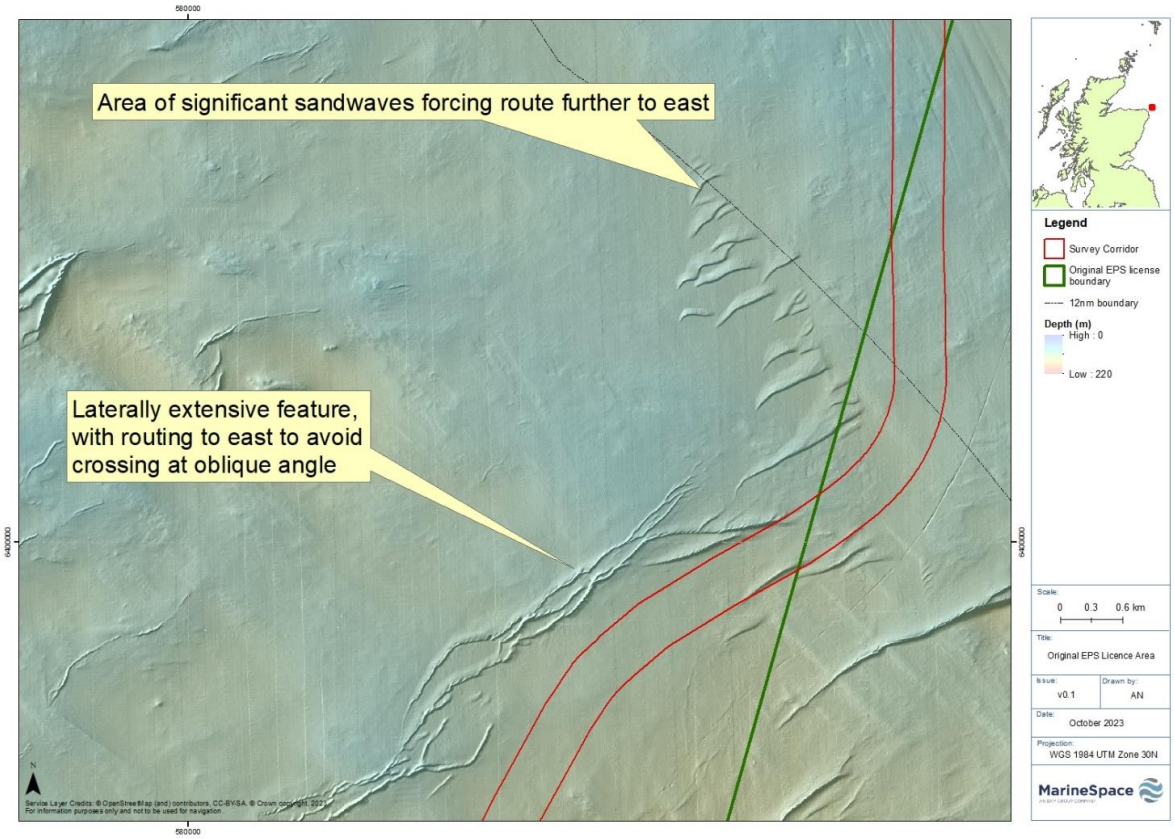

Figure 3: Seabed features necessitating refinement of the subsea cable marine survey corridor (red polygon), shifting it outside of the licensed boundary area (green line).

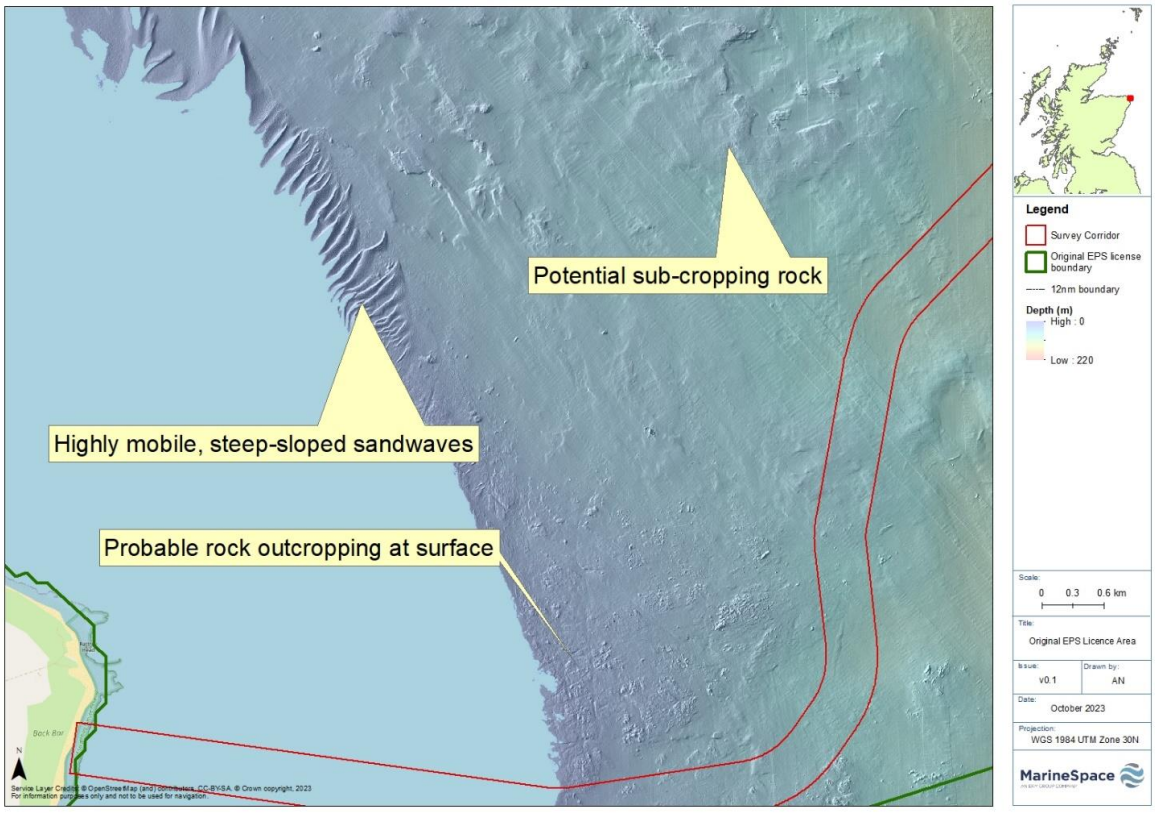

Figure 4: Seabed features near headland preventing the Spittal to Peterhead HVDC subsea cable marine survey corridor (red polygon) from taking northerly option within existing survey area.

3. Requirement for modification of EPS and Basking Shark Licence Boundary

The refined survey corridor which falls outside of the original EPS and Basking Shark licence boundary will ultimately enable improved burial of the subsea cable, reducing the need for cable protection, and decreasing the likelihood of seabed impact from the cable over time. As such, this technical note requests a variation to EPS-00010441 and BS-00010444 that would add an additional vertex to the original EPS and Basking Shark licence boundary, expanding it to include this refined survey corridor.

The boundary coordinates for this proposed refinement have been provided in Appendix 1.

4. Assessment of changes to EPS Risk Assessment

The EPS and Basking Shark Risk Assessment that accompanied EPS-00010444 and BS-00010441 (MarineSpace, 2023) has been reviewed against the proposed changes to the EPS and Basking Shark licence boundary area.

No other changes are proposed to the marine survey activity to be undertaken within the extended licensed area.

4.1. BIOLOGICAL BASELINE

4.1.1. PROTECTED AREAS

The refined EPS and Basking Shark Licence area boundary does not include any additional protected areas to those within the original licensed area.

Approximately 20 km^2 of the proposed extension to the EPS and Basking Shark Licence boundary area are within the Southern Trench NCMPA, which is designated for minke whale.

4.1.2. BIOLOGICAL BASELINE

The proposed variation to the EPS and Basking Shark licence boundary area would result only in negligible changes to the biological baseline set out in the EPS and Basking Shark Risk Assessment (MarineSpace, 2023. A comparison of the number of individuals potentially affected by marine survey activities within the original and refined licence boundary areas is provided in Table 1.

Table 1: Summary of potential impacts from Survey Operations, comparing original and refined EPS and Basking Shark license boundaries

Species	Species Density (Block S) (individuals/km^2)	Species Abundance (MU)	No. of individuals potentially impacted in the ORIGINAL Area of Potential Disturbance (4211 km^2)	ORIGINAL percentage of the reference population potentially affected	No. of individuals potentially impacted in the REVISED Area of Potential Disturbance (4235 km^2)	REVISED percentage of the reference population potentially affected
Harbour Porpoise	0.152	159,632 (NS)	640	0.4%	644	0.4%
Bottlenose dolphin	0.0037	224 (CES)*	16	7.1%	16	7.1%
White-beaked dolphin	0.021	34,025 (CGNS)	88	0.3%	89	0.3%
Common dolphin	None recorded	57,417 (CGNS)	0**	0**	0**	0**
Risso's dolphin	None recorded	8,687 (CGNS)	0**	0**	0**	0**
Minke Whale	0.0095	10,288 (CGNS)	40	0.4%	40	0.4%
Killer Whale	None recorded	No management unit	0**	0**	0**	0**

Species	Species Density (Block S) (individuals/km^2)	Species Abundance (MU)	No. of individuals potentially impacted in the ORIGINAL Area of Potential Disturbance (4211 km^2)	ORIGINAL percentage of the reference population potentially affected	No. of individuals potentially impacted in the REVISED Area of Potential Disturbance (4235 km^2)	REVISED percentage of the reference population potentially affected
Humpback Whale	None recorded	No management unit	0**	0**	0**	0**

**Proposed surveys overlap with both the Coastal East Scotland (CES) and Greater North Sea (GNS) management units. However, IAMMWG (2015) note that very few bottlenose dolphin are seen in the GNS MU, and those seen are thought to belong to the Coast Scottish group. Therefore, this assessment will use the CES MU as a precautionary measure, rather than the GNS MU (abundance 1,885).*

***No recorded sightings within SCANS-III Block S, but may have historical or very infrequent presence in the area*

4.2. RISK ASSESSMENT

The activities to be undertaken within the proposed refined EPS and Basking Shark Licence boundary area are the same as within the currently licensed area. The primary potential impact pathways that have been identified in relation to the proposed surveys remain:

- Collision with vessels;
- Underwater noise impacts from geophysical survey equipment; and,
- Underwater noise impacts from increased vessel traffic.

4.2.1. LIKELIHOOD OF IMPACT

Given that the same receptors are likely to be affected and that the sensitivity and exposure of these receptors to the potential impact will be same, the likelihood of impact on these receptors from the impact pathways set out above will be the same within the proposed extension to the EPS and Basking Shark Licence boundary area.

The overall likelihood of impact to these receptors remains the same as set out in the original EPS and Basking Shark Risk Assessment that accompanies EPS-00010444 and BS-00010444.

4.2.2. MAGNITUDE OF IMPACT

The magnitude of impact is based on the percentage of the reference population potentially disturbed by activities within the licensed boundary area. A comparison of the percentage of the reference population potentially disturbed within the original and refined EPS and Basking Shark Licence boundary areas is provided in Table 1.

For all species, there are no differences in the calculated magnitude of impact, therefore any changes in magnitude of impact resulting from the proposed variation in the licensed boundary area are expected to be negligible.

4.2.3. CUMULATIVE IMPACTS

No additional survey activities to those licensed under EPS-00010441 and BS-00010444 are proposed, **therefore no changes to the cumulative impacts predicted in the EPS and Basking Shark Risk Assessment (MarineSpace, 2023) are expected.**

4.2.4. MITIGATION MEASURES

The mitigation measures set out in the EPS and Basking Shark Risk Assessment (MarineSpace, 2023) and in the licence conditions accompanying EPS-00010441 and BS-00010444 will be adhered to.

No further mitigation measures are expected to be required.

5. Conclusions

A variation to the licensed area associated with EPS-00010441 and BS-00010444 is required to accommodate refinements to the SSEN Transmission Spittal to Peterhead HVDC subsea cable project marine survey corridor. These refinements are required r to ensure that the eventual subsea cable route optimises cable burial and minimises the need for cable protection such as rock placement.

The variation to the licence area proposed does not change any of the assessments made in the EPS and Basking Shark Risk Assessment provided in the previous licence application. All mitigation measures set out in the original EPS and Basking Shark Risk Assessment and all conditions associated with EPS-00010441 and BS-01000444 will be adhered to.

In summary:

- The overall likelihood of impact to these receptors remains the same as set out in the original EPS and Basking Shark Risk Assessment.
- For all species affected by the proposed variation, there are no differences in the calculated magnitude of impact, therefore any change in magnitude of impact is expected to be negligible.
- No changes to the cumulative impacts predicted in the EPS and Basking Shark Risk Assessment (MarineSpace, 2023) are expected.
- No further mitigation measures are expected to be required.

Therefore, a variation to the licences EPS-00010441 and BS-00010444 to disturb can be issued under Section 39 of the Conservation (Natural Habitats, &c) Regulations 1994 (as amended in Scotland).

6. References

DNV-GL AS (2016). Recommended Practice: Subsea power cables in shallow water. 165 pp.

Hutchison, Z. L., Gill, A. B., Sigray, P., He, H., & King, J. W. (2021). A modelling evaluation of electromagnetic fields emitted by buried subsea power cables and encountered by marine animals: considerations for marine renewable energy development. Renewable Energy, 177, 72-81. https://doi.org/10.1016/j.renene.2021.05.041

MarineSpace (2023). Spittal-Peterhead HVDC Cable: European Protected Species (EPS) and Basking Shark Risk Assessment for Geophysical and Geotechnical Surveys.

Appendix 1

Revised EPS and Basking Shark Licence boundary with additional vertex to include refined Spittal to Peterhead HVDC subsea cable project marine survey.

Projection: WGS 84 UTM30 N

Table 2: Revised licence boundary coordinates in decimal degrees.

OBJECTID	LAT_DD	LONG_DD	Notes
1	58.5955	-3.05999	Coast
2	58.6006	-2.33205	
3	58.0617	-1.94853	
4	57.95	-1.82303	
5	57.9082	-1.70936	
6	57.8838	-1.57963	
7	57.8358	-1.49793	
8	57.7538	-1.49516	
9	57.607	-1.62786	
10	57.5761	-1.82085	Coast
11	57.6987	-2.06136	Coast
12	57.7604	-2.05651	
13	57.8757	-1.74271	
14	57.926	-1.87815	
15	58.0274	-2.00055	
16	58.0463	-2.09426	
17	57.9292	-2.42984	
18	57.6729	-2.43271	Coast
19	57.6697	-3.05954	Coast
20	57.7354	-3.05579	
21	58.1254	-2.61034	
22	58.2003	-2.60841	
23	58.3788	-2.84284	
24	58.3771	-3.1064	Coast
25	58.353	-2.70628	Excluding
26	58.3889	-2.62463	Excluding
27	58.1752	-2.26251	Excluding
28	58.0191	-2.40357	Excluding
29	57.996	-2.44236	Excluding
30	58.1097	-2.55403	Excluding
31	58.1372	-2.54528	Excluding
32	58.2268	-2.55187	Excluding

Table 3: Revised licence boundary coordinates in degrees decimal minutes.

	Latitude			Longitude			
OBJECTID	Degrees	Minutes		Degrees	Minutes		Notes
1	58	35.730	N	3	3.5994	W	Coast
2	58	36.036	N	2	19.923	W	
3	58	3.702	N	1	56.9118	W	
4	57	57.000	N	1	49.3818	W	
5	57	54.492	N	1	42.5616	W	
6	57	53.028	N	1	34.7778	W	
7	57	50.148	N	1	29.8758	W	
8	57	45.228	N	1	29.7096	W	
9	57	36.420	N	1	37.6716	W	
10	57	34.566	N	1	49.251	W	Coast
11	57	41.922	N	2	3.6816	W	Coast
12	57	45.624	N	2	3.3906	W	
13	57	52.542	N	1	44.5626	W	
14	57	55.560	N	1	52.689	W	
15	58	1.644	N	2	0.033	W	
16	58	2.778	N	2	5.6556	W	
17	57	55.752	N	2	25.7904	W	
18	57	40.374	N	2	25.9626	W	Coast
19	57	40.182	N	3	3.5724	W	Coast
20	57	44.124	N	3	3.3474	W	
21	58	7.524	N	2	36.6204	W	
22	58	12.018	N	2	36.5046	W	
23	58	22.728	N	2	50.5704	W	
24	58	22.626	N	3	6.384	W	Coast
25	58	21.180	N	2	42.377	W	Excluding
26	58	23.334	N	2	37.478	W	Excluding
27	58	10.512	N	2	15.751	W	Excluding
28	58	1.146	N	2	24.214	W	Excluding
29	57	59.760	N	2	26.542	W	Excluding
30	58	6.582	N	2	33.242	W	Excluding
31	58	8.232	N	2	32.717	W	Excluding
32	58	13.608	N	2	33.112	W	Excluding