Eastern Green Link 3

Appendix 5A: Habitats Regulations Appraisal Stage 1 Screening

Prepared for: Scottish Hydro Electric Transmission plc (SHE-T)

Scottish & Southern Electricity Networks
TRANSMISSION

collaborative environmental advisers

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Abbreviations/Glossary

AA	Appropriate Assessment
AEoI	Adverse Effect on site integrity
BSc	Bachelor of Science
CEA	Collaborative Environmental Advisors
COHMS	The Conservation of Offshore Marine Habitats and Species Regulations
CSV	Construction Support Vessels
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DP	Dynamic Positioning
EC	European Commission
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
HDD	Horizontal Directional Drilling
HM	His Majesty's
HRGN	Habitats Regulations Guidance Note
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
HRA	Habitats Regulations Appraisal
IAMMWG	Inter-Agency Marine Mammal Working Group
IROPI	Imperative reasons of over-riding public interest
INTOG	Innovation and Targeted Oil & Gas
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MIG-Birds	Marine Industry Group for Ornithology
MLA	Marine Licence Application
MMO	Marine Management Organisation
MHWS	Mean High Water Springs
MCAA	Marine and Coastal Access Act
MD-LOT	Marine Directorate – Licensing Operations Team
MU	Management Unit
NE	Natural England
NETS	National Electricity Transmission System
NGET	National Grid Electricity Transmission
NS	NatureScot
NRW	Natural Resources Wales
NM	Nautical miles
OWF	Offshore Wind Farm
PTS	Permanent Threshold Shift
PLGR	Pre-Lay Grapnel Run
RIAA	Report to Inform Appropriate Assessment

RLB	Red Line Boundary
SAC	Special Area Of Conservation
SD	Standard Deviation
SSC	Suspended Sediment Concentration
SNCB	Statutory Nature Conservation Bodies
SPA	Special Projection Area
SHE-T	Scottish Hydro Electric Transmission
SSN-T	Scottish and Southern Electricity Networks – Transmission
TTS	Temporary Threshold Shift
TJB	Transition Joint Bay
UNCLOS	The United Nations Convention on the Law of the Sea
UK	United Kingdom
UXO	Unexploded Ordinance
WFD	Water Framework Directive
ZoI	Zone of Influence

1. Introduction

1.1. Background to the Proposed Development

This report, shadow the Habitats Regulations Appraisal (HRA), has been prepared on behalf of Scottish Hydro Electric Transmission plc (SHE-T) operating and known as Scottish and Southern Electricity Networks Transmission (SSEN Transmission) (the 'Applicant') to present the findings of the stage 1 Screening. It forms part of the Marine Licence Application (MLA) to the Marine Directorate – Licensing Operations Team (MD-LOT) for the construction and operation of the proposed Eastern Green Link 3 (ELG 3) grid reinforcement in Scottish waters. The end-to-end Project comprises a 2-gigawatt (GW) high voltage direct current (HVDC) system linking Aberdeenshire in Scotland, and King's Lynn and West Norfolk, Norfolk, with a landfall on the Lincolnshire coastline, England. EGL 3 (herein after referred to as 'the Project') comprises 700 km of subsea and underground HVDC cables between converter stations at each end of the electricity transmission link. These would in turn be connected to the National Electricity Transmission System (NETS) via High Voltage Alternating Current (HVAC) cables between the new converter stations and new substations.

For the purposes of seeking the necessary consents, the Project has been split into different 'Schemes' i.e. English Onshore Scheme, English Offshore Scheme, Scottish Onshore Scheme and the Scottish Offshore Scheme (with the latter herein referred to as 'the Proposed Development') with the Project schematic illustrated in **Figure 1-1**. The Applicant is applying for a Marine Licence from MD-LOT for the construction, operation and maintenance of the Proposed Development in Scottish waters. In English Waters, a Development Consent Order (DCO) under the Planning Act 2008 is being sought by National Grid Electricity Transmission (NGET).

The existing electricity distribution networks in Scotland operate using predominantly HVAC systems. However, transmission projects such as EGL 3 use HVDC technology because it is more efficient at transmitting large volumes of electricity over longer distances with lower losses compared to an equivalent HVAC system. A HVDC system also provides a greater degree of control over the magnitude and direction of flow, and this flexibility delivers complementary operational benefits. For large scale transmission projects such as EGL 3, specialised electrical plant and equipment contained within converter stations is required at either end of the transmission link to convert electricity from HVAC to HVDC (or vice versa).

This HRA Stage 1 Screening report is written with specific regard to the Proposed Development for which a single application for a Marine Licence will be made. The Proposed Development comprises:

- Approximately 145 km of subsea HVDC cable from the landfall at Sandford Bay to the boundary with adjacent English waters. The subsea cable system would consist of two bundled HVDC cables and a fibre optic cable (up to the first offshore joint) for control and monitoring purposes, as described further in **Chapter 3: Project Description.**

It is noted that laying and burial of the submarine cables within territorial waters (i.e., within 12 nautical miles (NM)) requires a Marine Licence under the Marine (Scotland) Act 2010. However, within the Scottish offshore region (between 12 and 200NM), licencing falls under the Marine and Coastal Access Act 2009 (MCAA) and within offshore waters the installation of an international electricity cable is exempt from requiring a Marine Licence under Section 81(2) of the MCAA. The placement of cable protection material e.g., concrete mattresses or rock would still qualify as a licensable activity in the Scottish offshore region and therefore would require a Marine Licence under MCAA.

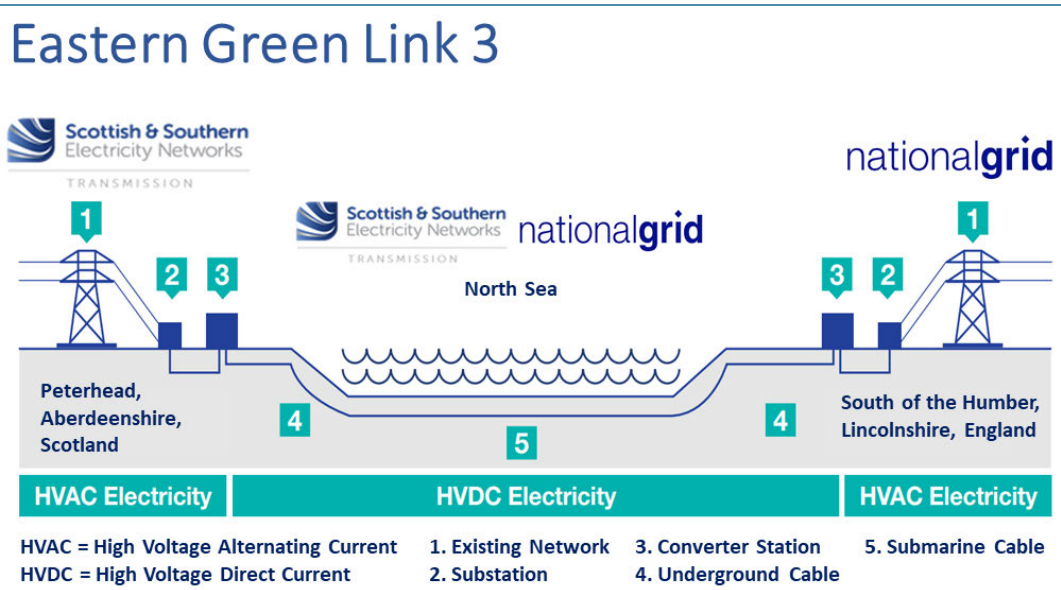

Figure 1-1: Project schematic

The landfall is the interface between the Scottish Onshore Scheme and the Proposed Development and would be located at Sandford Bay, Peterhead, Aberdeenshire. This is the location where subsea cables (which are commonly of a greater diameter compared to the onshore cables due to increased protection), would connect to the onshore underground cables at a buried transition joint bay (TJB) located above Mean High Water Springs (MHWS).

The location of the Proposed Development is illustrated by the Red Line Boundary (RLB) in **Chapter 3: Project Description**, **Figure 3-2**. The RLB is the maximum extent of seabed in which the construction and operation of the Proposed Development may take place. The RLB covers the entire area within which development could take place comprised of both temporary and permanent components of the Proposed Development. These include the proposed seabed preparation and maintenance works which would take place.

A Marine Licence is required for certain activities that are carried out within the United Kingdom (UK) marine area. MD-LOT is the regulator responsible for determining marine licence applications in Scottish waters.

1.2. Aim of this Report

Under the Habitats Regulations, and as part of the MLA process, the competent authority must consider whether the Proposed Development would have a likely significant effect (LSE) on a European Site (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites) and their qualifying features, either alone or in combination with other plans or projects. The Applicant in this report, has therefore undertaken Stage 1 of the HRA process (Screening), to present the Applicant's findings with regard to the Proposed Development's potential to have an LSE.

Where it is considered that there is no potential for LSE, this report will propose that the European Site (or qualifying feature(s)) will be 'screened out' from further consideration as part of the HRA process. Where the potential for LSE is uncertain or cannot be discounted for a European Site, it is proposed that the European Site will remain 'screened in' and will progress to the next stage of the HRA process. Where an LSE is considered likely, the competent authority (being MD-LOT in this instance) must carry out an Appropriate Assessment (AA) of the implications of the Proposed Development on that European Site in view of the site's conservation objectives. In such instances, further information will be gathered in the form of a Report to Inform Appropriate Assessment (RIAA), **Appendix 5B: Habitats Regulations Appraisal Stage 2 Report to Inform Appropriate Assessment,** which is provided by the Applicant to help inform the AA.

As such, this report considers all phases of the Proposed Development: construction, operation (including repair and maintenance) and decommissioning. All assumptions made with respect to the project description are clearly outlined, and where engineering details are uncertain, maximum design parameters have been used to provide a worst-case assessment. The methodology followed in this Screening has also had regard to recent UK and European case law on the Habitats Directive.

1.3. Structure of the report

This report is structured as outlined below:

- Section 1: (this Section): **Introduction** to the report and the Project;

- Section 2: **Project Description**, outlining key aspects of the Proposed Development relevant to the HRA process;
- Section 3: **Legislative context**, sets the legislative context, key stages of HRA and approach for Stage 1 Screening;
- Section 4: **Step 1: Identification of relevant European Sites;**
- Section 5 **Step 2: Identification of potential impact pathways with relevant European Sites and features;**
- Section 6 **Step 3 and 4: Determination of LSE**, at standalone project level and in-combination; and
- Section 7 **Stage 1 Screening statement**, summarising the outcome of Screening and next required steps.

1.4. Competent Experts

This HRA Screening was prepared by the team at Collaborative Environmental Advisers (CEA) and quality checked and approved by a marine specialist who has had a career spanning 20 years+ in development of marine infrastructure. This marine specialist also holds a BSc in Marine Biology and an MRes in Marine Technology.

2. Project Description

2.1. The Proposed Development

A full description of the Proposed Development is provided in **Chapter 3: Project Description**. The Project comprises a 2 GW HVDC submarine cable that extends from the MHWS mark at Anderby Creek Landfall, Lincolnshire, to Sandford Bay, Peterhead, Aberdeenshire through English and Scottish territorial waters and the UK Exclusive Economic Zone (EEZ). This report is however focussed on the Proposed Development comprising HVDC submarine cable from MWHS at the proposed landfall at Sandford Bay, Peterhead to the boundary with English adjacent waters.

The construction programme for the Proposed Development is expected to take approximately 55 months, commencing at the earliest in 2028 with pre-lay activities. Works at the landfall may commence in 2028/2029 with installation of the horizontal directional drilling (HDD) and ducts ahead of the main works. A summary of key maximum design parameters for the Proposed Development are shown below in **Table 2-1**. **Table 2-2** provides an indication of the types of vessels to be used during construction based on experience on other projects and will be confirmed prior to construction as a likely condition of the consent. Vessels will typically transit in a linear manner along the Proposed Development. However, their port of origin are unknown at this stage and will not be known until an installation contractor has been appointed.

Table 2-1: Summary of the Proposed Development key maximum design parameters

Parameter	Maximum design parameter
RLB width	RLB is 700m, surveyed corridor is 500 m wide but widens in certain sections to allow for future micro-routing around seabed features such as sand waves, challenging seabed conditions or sensitive habitats.
HDVC cable length	145 km
HVDC cables configuration	Bi-pole (one cable per pole)
HVDC cables number	Two
HVDC cables transmission capacity	2 GW
HVDC cables operating voltage	525 kV
HVDC cables outer diameter	150-190 mm
Fibre optic cable number	One
Fibre optic cable outer diameter	20-30 mm
Cable trench number	One
Cable trench maximum depth	3 m below non-mobile reference level
Cable trench maximum width	5 m
Cable trench disturbed area	20 m
Maximum width of cable protection	15 m

Parameter	Maximum design parameter
Indicative cable burial depth	2.5 m maximum
Footprint of cable installation equipment	16 m
Length of cable requiring boulder clearance using SCAR plough	50 km (estimated from length of boulder fields) in Scottish waters <32% of Scottish Section
Width of plough/cleared swathe	17 m swathe cleared
Total area of seabed disturbed by boulder plough	0.85 km^2
Depth of seabed disturbed by clearance plough	~10 cm (<2 m if trenching)
Length of cable requiring Pre-Lay Grapnel Run (PLGR)	145 km
Width of PLGR clearance corridor	30 m
Total area of seabed disturbed by PLGR	4.35 km^2
Maximum pre-sweeping clearance width	20 m
Length of cable requiring pre-sweeping	3.5 km
Total area of seabed disturbed by pre-sweeping	0.07 km^2
Maximum volume of sediment disturbed by pre-sweeping	1,000 m^3
Indicative Length of Cable requiring cable protection (excluding infrastructure crossings)	10 km
Maximum width of cable protection on seabed	10 m
Maximum height of cable protection berm	1.5 m
Maximum area of seabed covered by cable protection (excluding infrastructure crossings)	0.1 km^2
Total number of crossings required	7
Typical length of crossing	500 m (at some locations crossings may be combined due to proximity of infrastructure)
Indicative width of crossing	10 m
Indicative height of rock berm	1.5 m
Indicative area of seabed covered by cable crossings	0.035 km^2
Indicative volume of cable protection (excluding infrastructure crossings)	100,000 m^3

Table 2-2: Indicative vessel requirements for the Proposed Development

Construction activity	Indicative vessel requirements for the Proposed Development
Preconstruction survey	1 x survey vessel
Unexploded Ordinance (UXO) identification	1 x construction support vessels (CSVs)
Boulder clearance	1 x CSV
Sandwave pre-sweeping	1 x CSV
Crossing preparation	1 x CSV 1x rock placement vessel
PLGR	1x CSV
Sandford Bay landfall enabling works	1 x jack up barge / multicat 1 x tug 1 x crew transfer vessel

Construction activity	Indicative vessel requirements for the Proposed Development
	2 x small workboats
Cable lay and burial	1 x Cable lay vessel 1 x CSV 2 x tug / anchor handlers 5 x guard vessels 1 x rock placement vessel

3. Legislative Context

The 'Habitats Directive' (European Union Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) protects habitats and species of European nature conservation importance. Together with the 'Birds Directive' (Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds), the Habitats Directive establishes a network of internationally important sites (i.e., 'Natura 2000 Sites') designated for their ecological status. These include SACs and Sites of Community Importance (SCI) which are designated under the Habitats Directive and promote the protection of flora, fauna, and habitats, as well as SPAs designated under the Birds Directive to protect rare, vulnerable, and migratory birds. Collectively SACs and SPAs are referred to as "European sites" in UK legislation.

The Habitats Directive is transposed into UK law in the offshore area (>12 NM from the coast) by The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (COHMS) for both Scotland and England; and within the inshore area (<12 NM Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) in Scotland for the devolved matters as well as the Conservation of Habitats and species Regulations 2017 for reserved matters, these are collectively referred to as the "Habitats Regulations".

On the UK leaving the European Union (EU), the Conservation of Habitats and Species (EU Exit) (Scotland) (Amendment) Regulations 2019 (EU Exit Regulations) made changes to the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended)so that they could continue to operate effectively post-Brexit. While the basic legal framework for HRA is therefore maintained, the EU Exit Regulations transfer functions previously undertaken by the European Commission (EC) to Scottish Ministers. Furthermore, where the Habitats Regulations continue to use the term European Sites, those sites on land and sea, including inshore and offshore marine areas in the UK now form part of a "national site network" and are no longer part of the EU's "Natura 2000" site network.

Under the Habitats Regulations, the competent authority is required to undertake a HRA to determine whether there is potential for a plan or project to have an adverse effect on a European site, alone or in-combination with other plans or projects. The HRA process comprises three key stages, as follows:

- **Screening for Likely Significant Effects (LSE):** The process of identifying potentially relevant European Sites, and whether the project is likely to have a significant effect on the site either alone or in-combination with other plans and projects. If it is concluded at this stage that there is no potential for LSE, there is no requirement to carry out subsequent stages of the HRA.
- **Appropriate Assessment** – the 'Integrity Test': Where an LSE for a European site cannot be ruled out, either alone or in-combination with other plans and projects, it is necessary to provide further information to enable the competent authority to carry out an Appropriate Assessment (AA) of the implications of the project on the integrity of the site(s), either alone or in-combination with other plans and projects, in view of the site's conservation objectives. Where it is not possible to rule out an Adverse Effect on integrity of the site and its conservation objectives (AEoI) (integrity test), the HRA must progress to Stage 3.
- **Derogations:** Where an AEoI cannot be ruled out, three legal tests must be met and passed for derogations to be granted. First an assessment of alternative solutions to identify and examine alternative ways of achieving the objectives of the project to establish whether there are solutions that would avoid or have a lesser effect on the site(s). Where no alternative solution exists and where an AEoI remains, the next test is the consideration of Imperative Reasons of Overriding Public Interest (IROPI). If it has been shown that there are IROPI, the third test must identify and ensure that any compensatory measures needed to protect the overall coherence of the designated site network are taken.

An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

When undertaking the HRA process, it is also necessary to consider potential effects on proposed SPAs, candidate SACs and Ramsars (see policy 4 of the National Planning Framework 4, Scottish Government, 2024). Ramsar sites are designated under the Convention

on Wetlands (Ramsar, Iran, 1971), known as the "Ramsar Convention" to protect wetlands of international importance. Scottish Government states that as a matter of policy that sites designated under the Ramsar Convention are also included under the definition of a European Site (Scottish Government, 2025).

The AA is undertaken by the competent authority based on information provided by the Applicant.

3.1. Stage 1 Screening Approach

This section describes how the HRA Stage 1 Screening will be undertaken. According to NatureScot, (2025a) guidance, HRA Stage 1 Screening considers the characteristics of the Proposed Development and whether there are any potential pathways that could affect a European Site and confirms whether the Proposed Development itself or in-combination with other plans or projects, will result in an LSE. The Competent Authority will need to be satisfied that it agrees with the Applicant's conclusions. If the risk of the Proposed Development alone having an LSE cannot be ruled out on the basis of objective scientific evidence, an AA will be required. If the effect from the Proposed Development alone is not significant, the Applicant must still consider the effects of other plans or projects affecting the same European Site(s) and qualifying feature(s). If, in-combination with other plans or projects, the Proposed Development could have an LSE, an AA will be required.
This HRA Stage 1 Screening involves:

1. Description of the proposed project, and local site characteristics; and
2. Identification of relevant European Sites, compilation of information on their qualifying features and conservation objectives.
    a) Identify all European Sites with connectivity to the project using the Source-Pathway-Receptor model;
    b) Identify the qualifying features of the identified sites and the conservation objectives; and
    c) Determine which of those qualifying features and/or conservation objectives could be affected by the Proposed Development.
3. Identification of potential pathways for interaction between the project and the relevant sites, their qualifying features and/or conservation objectives, directly or indirectly; and
4. Determination of LSE, directly or indirectly, on the qualifying features and/or conservation objectives of the relevant site(s) both as:
    a) The project alone; and
    b) In-combination with other plans and projects.
5. Screening determination – in the absence of mitigation measures, determine if the project alone or in-combination with other plans and projects could undermine the conservation objectives of the site(s) and give rise to likely significant effects; and
6. Screening statement with conclusions – this includes the identification of sites (screened in sites) where it is not possible to conclude no likely significant effects therefore further information is required to inform an Appropriate Assessment of these sites (Stage 2).

Screening has been undertaken without the inclusion of mitigation measures intended to avoid or reduce the harmful effects to a European Site in line with HM Government, (2023) and Nature Scot, (2025) guidance.

This report has been informed by a review of the publicly available datasets (which have been cited throughout the report) and the available literature that allowed the characterisation of the receiving environment and supported the identification and assessment of potential effects and their significance. The baseline characterisation relevant to this HRA can be seen in:

- Chapter 6: Marine Physical Processes;
- Chapter 7: Intertidal and Subtidal Benthic Ecology;
- Chapter 8: Fish and Shellfish;
- Chapter 9: Intertidal and Offshore Ornithology; and
- Chapter 10: Marine Mammals and Marine Reptiles.

The examination, analysis and evaluation of the relevant information that supported the Screening process conducted and documented in this report followed the precautionary principle throughout.

3.1.1. Source-Pathway-Receptor Model

The potential for LSEs has been assessed using a Source-Pathway-Receptor model. This approach identifies likely environmental effects resulting from the proposed construction, operation and maintenance and decommissioning of the Proposed Development. For instance, a project activity (source) may entail a predicted change in environmental conditions affecting either directly or indirectly

(the pathway) a specific component of the baseline environment (the receptor / qualifying feature). If the receptor / qualifying feature is sensitive to the change it could result in either a positive or negative effect. **Figure 3-1** presents this model with a specific example:

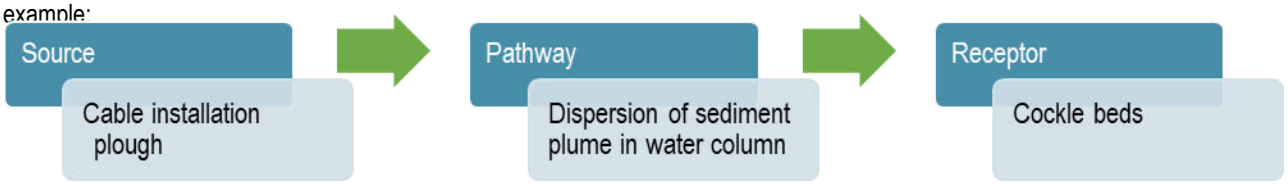

Figure 3-1 Source-Pathway-Receptor model example

3.1.2. Guidance

The Screening has been undertaken in accordance with the following Guidance:

- National Planning Framework 4: Part 2 –National Planning Policy (Scottish Government, 2024);
- Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021);
- Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018);
- The European Commission Guidance - Article 6 of the Habitats Directive – "Rulings of the European Court of Justice. Final Draft", September 2014 (EC, 2014);
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (EC, 2007);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2002);
- Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (Planning Inspectorate, 2025);
- Habitats Regulations Assessments: Protecting a European Site (Defra *et al*. 2021);
- The Habitats Regulations Handbook (Tyldesley and Chapman, 2021); and
- Guidance on when new marine Natura 2000 sites should be taken into account in offshore renewable energy consents and licences (DECC, 2016).

In relation to guidance issued by the Statutory Nature Conservation Bodies (SNCBs), this includes:

- NatureScot Guidance Note - The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement (NatureScot, 2025);
- European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (NatureScot, 2022);
- Seasonal Periods for Birds in the Scottish Marine Environment (NatureScot, 2020);
- JNCC: Guidance for assessing the significance of noise disturbance against Conservation Objectives of Harbour Porpoise SACs (JNCC, 2020);
- Joint SNCB Interim Displacement Advice Note (Marine Industry Group for Ornithology (MIG-Birds), 2022);
- Joint Interim Advice On The Treatment Of Displacement For Red-Throated Diver (MIG-Birds, 2022a);
- Natural England Offshore Wind Cabling: ten years' experience and recommendations (Natural England, 2018); and
- Habitats Regulations Appraisal (HRA) (NatureScot, 2025a).

4. Step 1: Identification of Relevant European Sites

4.1. Search Areas for European Sites

Selection of relevant European Sites follows guidance from the Planning Inspectorate (2025) which recommends that the distance (i.e. from the site to the Proposed Development) should be evaluated on a case-by-case basis, that the precautionary principle should be adopted, and that the following should be included:

- Any European Site within the Proposed Development which, using the Source-Pathway-Receptor model, may be affected by the proposed activities;

- Any European Site within the likely zone of influence (ZoI) of the Proposed Development following the Source-Pathway-Receptor model; and
- Any European Site that is designated for mobile Annex II species, Annex I bird species and regularly occurring migratory bird species that have the potential to occur within the Proposed Development or the likely ZoI of the Proposed Development.

The principles outlined above have been used at this Screening stage to identify relevant European Sites. Search areas for Annex I habitats, Annex II species, Annex I bird species and regularly occurring migratory bird species which are primary and qualifying features (i.e. features for which the site is designated) of a European Site were developed based on either the maximum ZoI of a potential impact on a qualifying feature (i.e., the maximum spatial extent over which potential impacts could affect receptors), or for mobile species, the spatial extent over which the impacts of anthropogenic activities should be taken into consideration.
Table 4-1: presents the search area used in the Screening of European Sites.

The boundary of the Marine Licence is up to MHWS at the proposed landfall. As such, there is no possible direct interaction and no pressure pathway on terrestrial or freshwater SACs that have no coastal habitat and no mobile species with a marine element (e.g., mobile marine or partially marine species). Such sites have been considered to be outside any search area for relevant European Sites, unless they are at the landfall, within the RLB.

Table 4-1: Search area for Relevant European Sites

Feature	Search Area	Justification
Sites designated for: Annex I habitat and/or Annex II benthic species	15 km from RLB	All direct impacts from the Proposed Development such as habitat loss will be spatially limited and confined to the RLB. However, it is recognised that the maximum ZoI could occur from the impact of a temporary increase and deposition of suspended sediments. Although 90% of sediments suspended during cable laying activities are predicted to resettle within 1 km of the cable corridor (Sinclair *et al.,* 2023), another study by Gooding et al., (2012) suggests that fine particles may travel 1-2 km from the source. **Chapter 6: Marine Physical Processes** concluded that the maximum distance that suspended sediment will travel from the source is 13.9 km. A search area of 15 km either side of the RLB has been applied as a precautionary approach.
Sites designated for: Annex II migratory fish	40 km from RLB	A precautionary approach to the identification of relevant sites has been adopted which considers all European Sites with Annex II migratory fish as a qualifying feature, within a 40 km buffer either side of the RLB. It should be noted that this buffer is considered to be over precautionary with respect to capturing the ZoI from impacts (e.g., underwater noise) associated with the Proposed Development, however, it allows for the possibility that migratory fish such as Atlantic salmon (*Salmo salar*), allis shad (*Alosa alosa*), twaite shad (*Alosa fallax*), sea lamprey (*Petromyzon marinus*) or river lamprey *Lampetra fluviatilis*) from nearby SACs may be passing through the RLB. **The River Dee SAC contains Atlantic Salmon and has been included despite it being 40.6 km from the RLB, and this is considered to be a precautionary approach.** The largest ZoI for Annex II migratory fish is likely to be from underwater noise as a result of the Proposed Development vessels using pre-installation geophysical surveys and dynamic positioning (DP) systems which will be utilised during the construction, maintenance, and decommissioning phases of the Proposed Development. Behavioural disturbance is observed in fish as a result of DP vessels at a distance of up to 1,359 m (North Connect, 2017). Further to this, there is the potential for underwater noise as a result of vessel noise and construction operations to impede fish migration within estuarine catchments. Although vessels will be restricted to within the RLB, Annex II migratory fish are mobile receptors which can travel within range to be impacted by vessel noise, therefore the 40 km search area is appropriate.
Sites designated for: Annex II Otter	32 km along the coast in either direction from the landfall	The Eurasian otter (*Lutra lutra*) is a semi-aquatic mammal which occurs in a wide variety of aquatic habitats such as rivers, streams, lakes, estuaries and on the coast. The Scottish population has an unusually high proportion (perhaps 50% or more) of coastal-dwelling individuals, which feed almost exclusively in the sea. Mainly active during the day, coastal otters generally have much smaller home

Feature	Search Area	Justification
		ranges than their riverine counterparts (as little as 4-5 km of coastline), because of the abundance of fish and crustacean prey in inshore waters (NatureScot, 2023). It has been suggested that the otter's foraging range is approximately 80m seaward from the coast (NWPS, 2015) The largest ZoI for Annex II otter is likely to be from underwater noise as a result of the Proposed Development. Although vessels will be restricted to within the RLB, Annex II otter are mobile receptors which can travel within range to be impacted by vessel noise and geophysical surveys. In freshwater habitats, otters are largely (but not exclusively) nocturnal and occupy very large home ranges, around 32 km for males and 20 km for females (NatureScot, 2024a). Therefore, the search area for European Sites with Annex II otter as a qualifying feature is based off of the largest home range of 32 km, along the coastline.
Sites designated for: Annex II Cetaceans	Relevant Marine Mammal Management Unit for UK European Sites 250 km from RLB for transboundary European Sites	The largest ZoI for Annex II cetaceans is likely to be from underwater noise as a result of the Proposed Development. Although vessels will be restricted to within the RLB, Annex II cetaceans are mobile receptors which can travel within range to be impacted by vessel or geophysical survey noise. In the UK the only cetacean species afforded protection through the designation of an SAC are bottlenose dolphin (*Tursiops truncates*) and harbour porpoise (*Phocoena phocoena*). Most cetaceans are wide-ranging, and individuals encountered within UK waters form part of a much larger biological population whose range extends into adjacent jurisdictions. As a result, management units (MUs) have been outlined for the species by the Inter-Agency Marine Mammal Working Group (IAMMWG., 2023) which comprises representatives of the UK Statutory Nature Conservation Bodies (SNCB) from, Natural England (NE); NatureScot (previously known as Scottish Natural Heritage), Natural Resources Wales (NRW) and Joint Nature Conservation Committee (JNCC) The boundaries of an MU do not necessarily reflect the full range of a species but instead shows areas within their territory where management of human activities is undertaken. These units were defined by considering several factors including the known population structure, movement and habitat use, as well as jurisdictional boundaries and divisions already used in the management of human activities. MUs are used to inform SNCB advice and are therefore the appropriate spatial scale for assessment of environmental impacts on species from marine development projects. The Proposed Development lies within the North Sea (NS) MU for harbour porpoise, the Greater North Sea (GNS) and Coastal East Scotland (CES) MUs for bottlenose dolphin. Therefore, these MUs will be used as the search area for relevant European Sites with Annex II harbour porpoise and bottlenose dolphin as qualifying features. A distance of 250 km has been used to screen transboundary European Sites. In UK waters harbour porpoise are observed to have seasonal grounds which stretch longitudinally for approximately 250 km. This is therefore considered to be an appropriate distance to screen transboundary sites for mobile marine mammal species.
Sites designated for: Annex II Grey Seal (*Haliochoerus gryphus)* and/or Harbour/Common Seal (*Phoca vitulina*)	100 km from RLB 50 km from RLB	The largest ZoI for Annex II grey seal and harbour seal is likely to be from underwater noise as a result of the Proposed Development. Although vessels will be restricted to within the RLB, Annex II grey seal and harbour seal are mobile receptors which may travel within range to be impacted by vessel or geophysical survey noise. The search area for relevant European sites has been established based on information presented in the Offshore Energy Strategic Environmental Assessment 4 stating that grey seal are estimated to forage up to 100 km from haul-out sites on the coast, whilst harbour seal take shorter trips up to 50 km (DECC 2022).

Feature	Search Area	Justification
Sites designated for: Annex I bird species & regularly occurring migratory species	Based on mean-maximum foraging ranges ± 1 standard deviation (SD) for priority breeding seabird species as identified in **Table 4-2** from the RLB 4 km for seaducks, geese and swans. Waders – sites overlapping the RLB For non-breeding seabird species, based on the maximum ZoI for ornithology receptors which is 15km for Suspended Sediment Concentrations (SSC).	All direct impacts will be spatially limited and confined to the RLB. There is the possibility that species from distant SPAs may be foraging within or passing through the RLB. Thaxter *et al*., (2012) and Woodward *et al.,* (2019) reported on representative mean maximum foraging ranges ± 1 SD for a range of species from a breeding colony to a foraging area. Whilst applying mean maximum foraging range ± 1 SD would encompass the majority of a population's home-range area, the overall size of the predicted foraging areas around the colony would potentially make it too large to be a useful management tool (Soanes *et al*., 2016). Similarly, the assumption that seabirds are uniformly distributed out to some threshold distance from their colonies, such as their putative maximum foraging range, is unrealistic (Wakefield *et al*., 2017). Therefore, given the scale and largely offshore nature of the Proposed Development, it was considered disproportionate to identify relevant SPAs on the basis of mean maximum foraging ranges± 1 SD of their qualifying features, as there is no evidence to support an impact pathway given the scale and nature of the Proposed Development. As such a refined list of seabird SPAs has been included. This is based on the SNCB Joint Interim Advice (MIG_Birds, 2022) which identifies that the priority species for assessment of displacement effects are typically diver and sea duck species, common guillemot (*Uria aalge*), razorbill (*Alca torda*), puffin (*Fratercula arctica*) and gannet (*Morus bassinus*). Gannet scores 2 (low sensitivity) under 'Disturbance Sensitivity' and 'Habitat Specialization' scores from Bradbury *et al.,* (2014) (expanded from Furness *et al*., 2013) but have had scores revised by Wade *et al*., (2016) based on empirical studies demonstrating they are sensitive to displacement and barrier effects from offshore wind farms (OWFs) (Krijgsveld et al., 2011, Vanermen *et al.,* 2013). However, sensitivity to displacement from vessels remains low (score 2). Gannet therefore have been discounted from the Screening. Although not included in the Joint Interim Advice (MIG-Birds, 2022), common tern (*Sterna hirundo*) are also considered in the Screening. Tern species are not typically sensitive to disturbance however, other tern species in **Table 4-2** have a habitat specialisation score of 3 or more and therefore, it can be assumed that common tern would be similar. It is noted that the MIG-Birds, (2022) guidance relates specifically to OWF developments (in relation to the wind farm arrays). However, it is recognised that these priority species are also likely to be sensitive to vessel presence and noise, leading to disturbance and displacement. For example, it is advised by Natural England that there is potential for red throated divers (*Gavia* stellata) to be displaced from up to 2 km from vessels. Razorbill and puffin are also identified as being susceptible to displacement due to vessel traffic (Wade *et al.,* 2016). SPAs and Ramsars have been considered relevant if designated for breeding priority seabirds (guillemot, razorbill and puffin), diver and sea duck species identified as being sensitive to disturbance / displacement (JNCC, 2022, Wade *et al.,* 2016), or a species which is identified as having a high habitat specialisation, which could potentially be present in the RLB based on their mean maximum foraging ranges ± 1 SD (Woodward *et al.,* 2019). As the foraging ranges provided by Woodward *et al*., (2019) are based on breeding colonies, this is not considered an appropriate method to screen for non-breeding bird features. SPAs and Ramsars have been considered relevant if designated for non-breeding priority seabirds (guillemot, razorbill and puffin), diver and sea duck species identified as being sensitive to disturbance / displacement (JNCC, 2022) or a species which is identified as having a high habitat specialisation if the site is within the largest ZoI which could impact bird receptors. As identified in **Table 5-1**, the largest ZoI is 15 km from the RLB for the impact of a temporary increase and deposition of suspended sediments. Therefore, non-breeding bird features within 15 km of the RLB will be assessed. Most species of seaduck, geese and swans are sensitive to noise and visual disturbance from vessel traffic (Fliessback *et al.,* 2019; Atterbury *et al.,* 2021), therefore if the Proposed Development is within 4 km of a designated site which

Feature	Search Area	Justification
		has a species of seaduck, geese or swan as a qualifying feature, this assessment considers it relevant (MIG-Birds, 2022). Waders and harriers use the intertidal area for foraging and may use coastal habitats for roosting. This group is sensitive to visual and noise disturbance which affects intertidal habitat. SPAs and Ramsar sites with species of waders and/or harriers as qualifying features which overlap with the RLB have been screened in. As the maximum foraging range of priority bird species (As listed in **Table 4-2**) is 250.8km, this distance has been used to screen for ornithology transboundary European Sites.

4.1.1. Range for Breeding Birds Associated with European Sites

As described in
Table 4-1: above, for Screening the search area for breeding Annex I bird species and regularly occurring migratory bird species are based on mean-maximum foraging ranges ± 1SD for priority species or those with a high disturbance susceptibility or habitat specialisation score. The Proposed Development considered as part of this Screening report is a grid reinforcement cable project, and as such is unlikely to adversely affect bird populations at the same scale as an OWF. If no data has been provided for a species' foraging range, the maximum for the functional group has been assumed.

Table 4-2: Foraging ranges, disturbance susceptibility and habitat specialisation scores used to screen relevant SPAs

Species	Disturbance susceptibility *	Habitat specialisation *	Mean-max foraging ranges (km) ± Standard Deviation^	Confidence of Data ^
Priority seabird species				
Common guillemot *Uria aalge*	3	3	95.2	Highest
Razorbill *Alca torda*	3	3	122.2	Good
Atlantic puffin *Fratecula arctica*	2	3	250.8	Good
Divers, grebes and mergansers				
Black-throated diver *Gavia arctica*	5	4	No data	No data
Red-throated diver *Gavia stellata*	5	4	9.0	Low
Great northern diver *Gavia immer*	5	3	No data	No data
White-billed diver *Gavia adamsii*	5	4	No data	No data
European Shag *Phalacrocorax aristotelis*	3	3	23.7	Highest
Great cormorant *Phalcrocoax carbo*	4	3	33.9	Moderate
Red-breasted merganser *Mergus serrator*	3	4	No data	No data
Goosander *Mergus merganser*	4	4	No data	No data
Great-crested grebe *Podiceps cristatus*	3	4	No data	No data
Slavonian grebe *Podiceps auritus*	3	4	No data	No data
Seaducks				
Common scoter *Melanitta nigra*	5	4	No data	Uncertain
Common goldeneye *Bucephala clangula*	4	4	No data	No data

Species	Disturbance susceptibility *	Habitat specialisation *	Mean-max foraging ranges (km) ± Standard Deviation^	Confidence of Data ^
Velvet scoter *Melanitta fusca*	5	3	No data	Moderate
Common eider *Somateria mollisima*	3	4	21.5	Poor
Greater scaup *Aythya marila*	4	4	No data	No data
Long-tailed duck *Clangula hymalis*	3	4	No data	Uncertain
Auks				
Black guillemot *Cepphus grylle*	3	4	9.1	Moderate
Terns and gulls				
[redacted]	2	4	5.0	Moderate
Arctic tern *Sterna paradisaea*	2	3	40.5	Good
Sabine's gull *Xena sabini*	2	3	No data	No data
Black tern *Childonas niger*	2	3	No data	No data
Roseate tern *Sterna dougalii*	2	3	23.2	Moderate
Sandwich tern *Sterna sandivicensis*	2	3	57.5	Moderate
Common tern (*Sterna hirundo*)	No data	No data	26.9	Good
Black-headed gull *Chroicocephalus ridibundus*	1	3	18.5	Uncertain

* MIG-Birds, (2022)

^ Woodward *et al*. (2019)

Key to disturbance susceptibility and habitat specialisation scores:

1 is the lowest and 5 is the highest i.e., a disturbance level of 5 suggests that species is highly sensitive to disturbance

Key to confidence of data score:

Highest	> 5 direct studies; graphs and standard deviation suggest relatively low variability between sites and hence higher confidence that estimates are likely to be representative for unsampled sites.
Good	> 5 direct studies; graphs and standard deviation show wider variability between sites, hence lower confidence that estimates will be representative for all sites.
Moderate	2-5 direct studies
Low	Indirect measures or only 1 direct study
Uncertain	Survey-based estimates
Poor	Few survey estimates or speculative only

4.2. Relevant European Sites

A geographical information system (GIS) using publicly available shapefiles from (Natural England, 2024a, 2024b; NatureScot, 2023) and the (Scottish Government, 2023) was used to identify European Sites within the relevant search area (defined in **Table 4-1**). **Table 4-3** lists the European Sites selected for consideration in the Stage 1 Screening, the relevant qualifying features, distance to the proposed RLB (or the distance intersected by the Proposed Development if this is the case), the overarching conservation objectives that could be affected by the Proposed Development and whether any of the qualifying features of the site are Annex I habitats, Annex II species, Annex I bird species or regularly occurring migratory bird species. Where a qualifying feature is listed within the European site but is not listed as a priority species by the joint SNCB advice (MIG-Birds, 2022), or is outside the relevant search area, it has been greyed out in the table and will not be considered further in the Screening as based on professional judgement, there is no Source-Pathway-Receptor link between the qualifying feature and the Proposed Development.

It should be noted that there are no relevant designated sites which match the selection criteria for Annex II benthic species or Annex II seal species and therefore, these receptors are therefore not considered further in the Stage 1 Screening. Additionally, there are no transboundary European Sites within the search area defined in **Table 4-1** for Annex I bird species & regularly occurring migratory species. Relevant European Site descriptions are shown in **Appendix 1: Site Descriptions** of this document.

Figure 4-1 (Drawing reference C01494-EGL3-MEA-SPEC-008-C) presents the relevant SACs and marine mammal transboundary European Sites within the search areas defined in **Table 4-1**. **Figure 4-2 (Drawing reference C01494-EGL3-MEA-SPEC-009-E)** presents the relevant SPAs and Ramsar sites within the foraging range for the three priority seabird species and the maximum foraging range of each of the relevant functional groups, as defined in **Table 4-2**. It should be noted that there were norelevant SPAs identified with black guillemot as a qualifying feature and as this was the only species included under 'auks', this functional group has not been included in **Figure 4-2 (Drawing reference C01494-EGL3-MEA-SPEC-009-E).**

Harbour Porpoise - North Sea Management Unit and 250 km Transboundary Search Area

Southern North Sea SAC

0 50 100 150 KM

Scale @ A3: 1:7,250,000

Bottlenose Dolphin - Coastal East Scotland Management Unit and 250 km Transboundary Search Area

Moray Firth SAC

Atlantic Salmon and Freshwater Pearl Mussel - 40km Search Area

River Dee SAC

Vegetated Sea Cliffs - 2km Search Area

0 3 6 9 KM

Buchan Ness to Colleston Coast SAC

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Search Areas for Special Areas of Conservation (SAC)

C01494-EGL3-MEA-SPEC-008-C

Legend

- Red Line Boundary
- Search Area
- Relevant Designated Site
- Non-Relevant Designated Site
- Scottish Adjacent Waters
- 12NM Limit
- EEZ

0 60 120 180 KM

0 30 60 90 NM

N

Date	01/09/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:3,000,000
Created	AN
Reviewed	JC
Authorised	EEv

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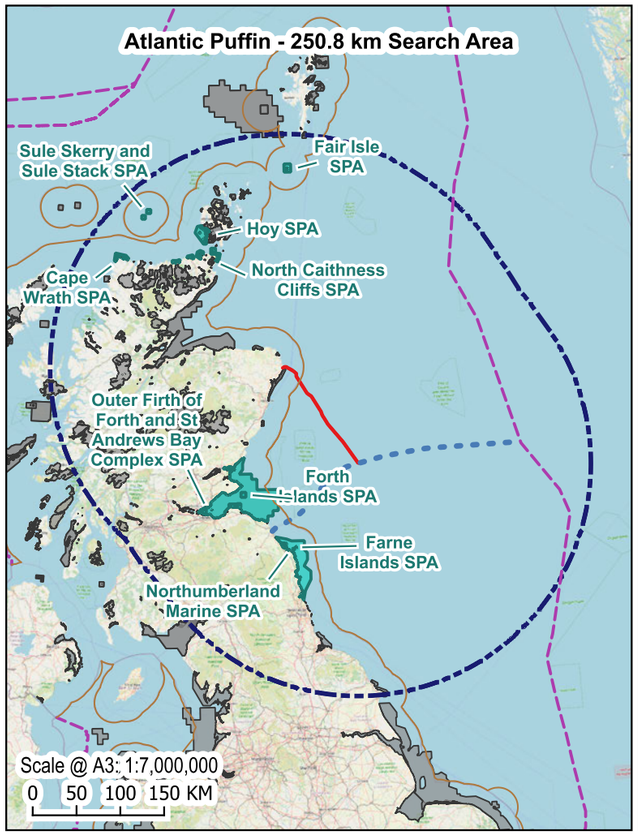

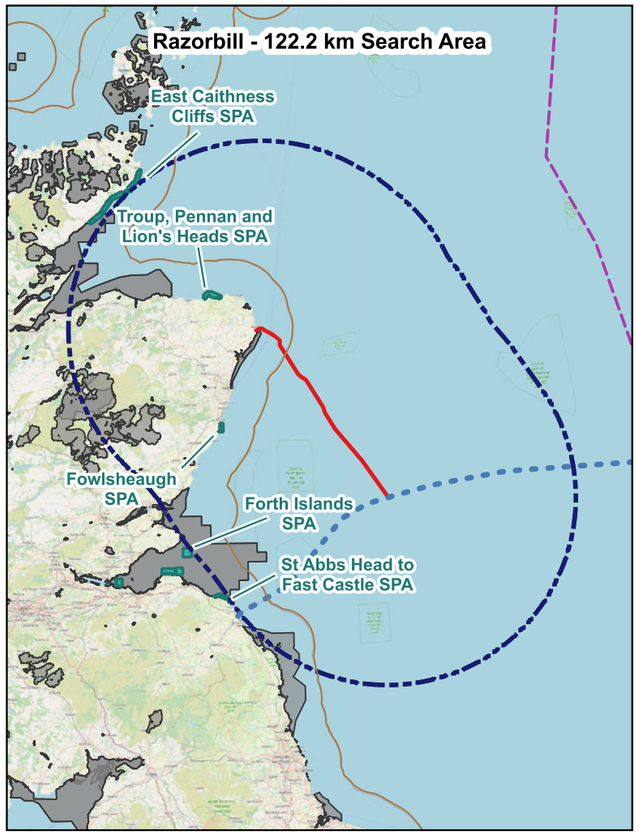

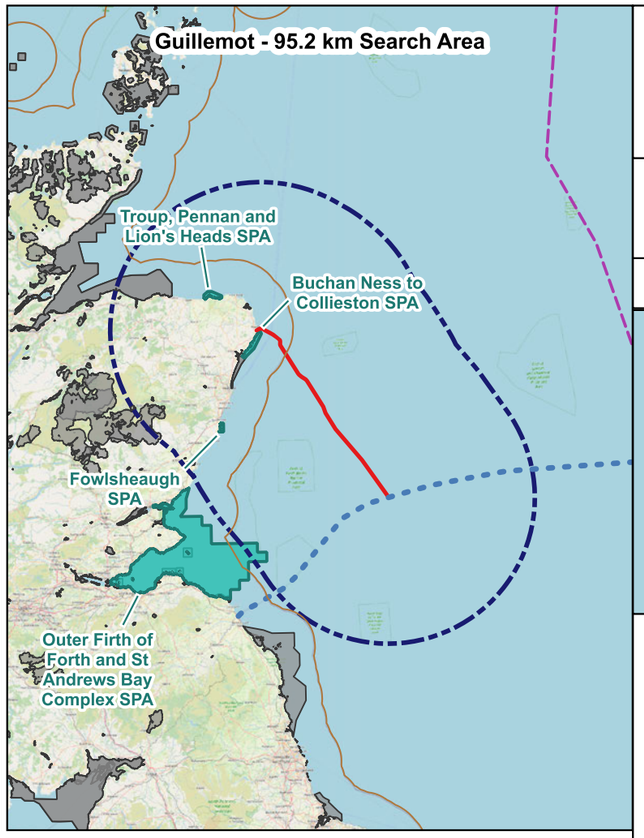

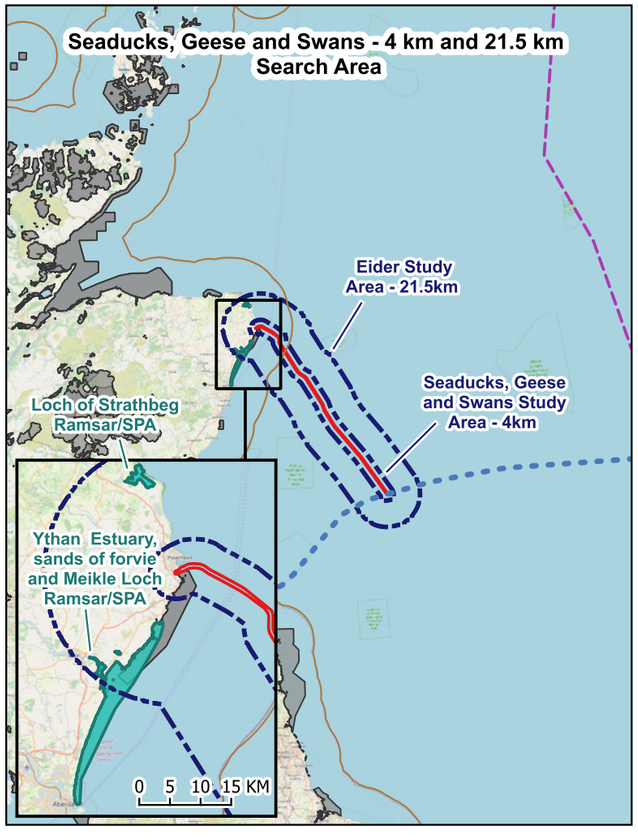

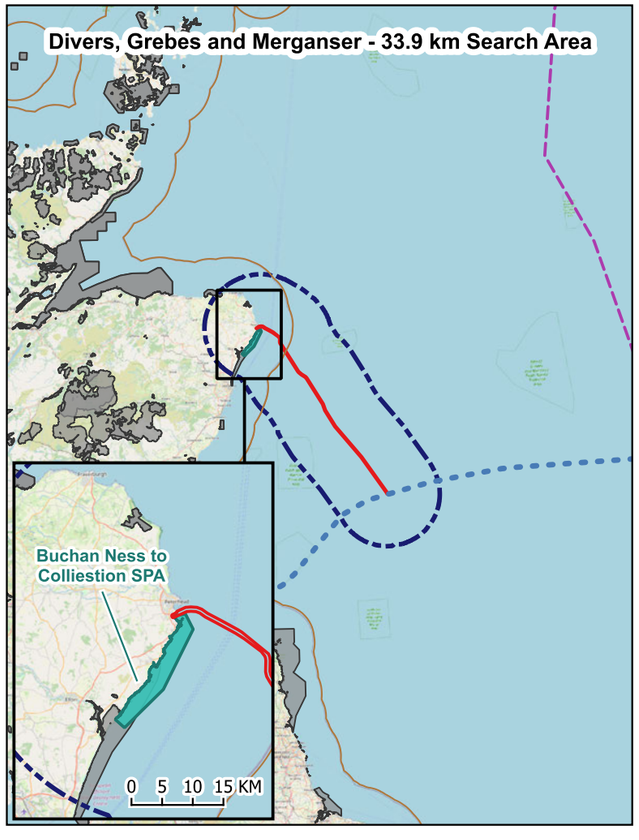

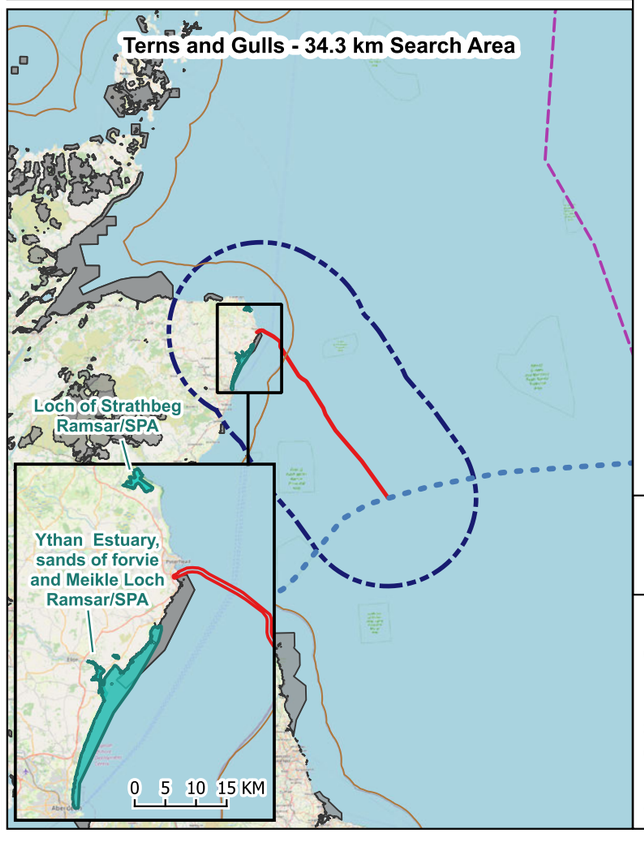

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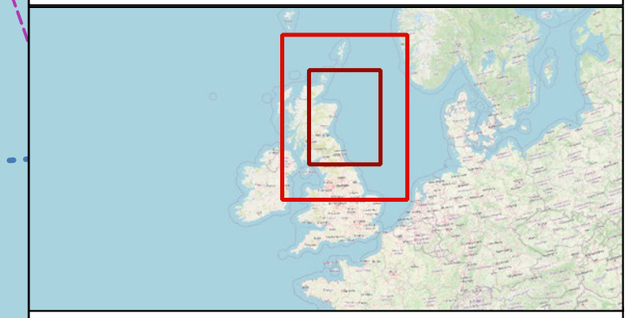
Search Area for Special Protection Areas (SPA)

C01494-EGL3-MEA-SPEC-009-E



- Red Line Boundary
- Search Area
- Relevant Designated Site
- Non-Relevant Designated Site
- 12NM Limit
- Scottish Adjacent Waters
- EEZ

0 60 120 180 KM
0 30 60 90 NM

N

Date	02/09/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:4,000,000
Created	AN
Reviewed	JC
Authorised	EEv

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Table 4-3: Relevant European Sites selected for consideration in Stage 1 Screening

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
Buchan Ness to Collieston Coast SPA [UK9002491]	Scotland	0.0 km	**Species:** • Common guillemot (breeding)*; • European shag (breeding)*; • Fulmar (*Fulmarus glacialis*), (breeding)*; • Herring gull (*Larus argentatus*), (breeding)*; • Black-legged kittiwake (*Rissa tridactyla*), (breeding)*; and • Seabird assemblage.	• To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and • To ensure for the qualifying species that the following are maintained in the long term: o Population of the species as a viable component of the site; o Distribution of the species within the site; o Distribution and extent of habitats supporting the species; o Structure, function and supporting processes of habitats supporting the species; and o No significant disturbance of the species.	X	X	X	✓
Buchan Ness to Collieston Coast SAC [UK0030101]	Scotland	1.77 km	**Habitats:** • Vegetated Sea cliffs.	• To ensure that the qualifying feature of Buchan Ness to Collieston SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status. • To ensure that the integrity of Buchan Ness to Collieston SAC is maintained by meeting objectives 2a, 2b and 2c. o 2a Maintain the extent and distribution of the habitat within the site.	X	X	✓	X

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				○ 2b: Maintain the structure, function and supporting processes of the habitat. ○ 2c: Maintain the distribution and viability of typical species of the habitat.				
Ythan Estuary, Sands of Forvie and Meikle Loch SPA [UK9002221]	Scotland	8.0 km	**Species:** • Sandwich tern (*Sterna sandvicensis*), (breeding); • Common tern (breeding); • Common eider (non-breeding)^; • [redacted] (breeding); • Pink-footed goose (*Anser brachyrhynchus*), (non-breeding)^; • Lapwing (*Vanellus vanellus*), (non-breeding)^;and • Redshank (*Tringa totanus, (non-breeding)*)^.	• To ensure that the qualifying features of Ythan Estuary, Sands of Forvie and Meikle Loch SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of Ythan Estuary, Sands of Forvie and Meikle Loch SPA is restored in the context of environmental changes by meeting objectives for each qualifying feature: ○ The populations of the qualifying features are viable components of the site; ○ The distributions of the qualifying features throughout the site are maintained by avoiding significant disturbance of the species; and ○ The supporting habitats and processes relevant to the qualifying features and their prey/food resources are maintained, or where appropriate, restored.	X	X	X	✓
Loch of Strathbeg SPA [UK9002211]	Scotland	13.9 km	**Species:** • Sandwich tern (breeding); • Common goldeneye (non-breeding)^;	To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
			• Barnacle goose (Branta leucopsis) (non-breeding)^; • Greylag goose (Anser anser)(non-breeding)^; • Pink-footed goose ^ (non-breeding); • Teal (Anas crecca) (non-breeding)^; and • Whooper swan (Cygnus cygnus) (non-breeding)^.	To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; and • No significant disturbance of the species.				
Loch of Strathbeg Ramsar [UK13041]	Scotland	13.9 km	**Species:** • Sandwich tern, (Breeding); • Common goldeneye, (Non-breeding)^; • Greylag goose, (Non-breeding)^; • Pink-footed goose, (Non-breeding)^; • Svalbard barnacle goose, (Non-breeding)^; • Teal (Non-breeding)^; and • Whooper swan (Non-breeding)^.	N/A	X	X	X	✓
Ythan Estuary and Meikle Loch Ramsar [UK13061]	Scotland	15.6 km	**Species**: • Sandwich tern, (breeding); • Eider (non-breeding)^; • Common tern, (Breeding); • Lapwing, (non-breeding)^; • [redacted] (breeding); • Pink-footed goose, (non-breeding)^;and • Redshank, (non-breeding)^.	N/A	X	X	X	✓
Troup, Pennan and Lion's Heads SPA	Scotland	30.9 km	**Species:** • Razorbill breeding*;	• To avoid deterioration of the habitats of the qualifying species or significant disturbance to	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
[UK9002471]			• Common guillemot breeding*; • Fulmar, breeding*; • Herring gull,breeding*; and • Black-legged kittiwake, breeding*.	the qualifying species, thus ensuring that the integrity of the site is maintained; and • To ensure for the qualifying species that the following are maintained in the long term: o Population of the species as a viable component of the site; o Distribution of the species within site; o Distribution and extent of habitats supporting the species; o Structure, function and supporting processes of habitats supporting the species; and o No significant disturbance of the species.				
River Dee SAC [UK0030251]	Scotland	40.7 km **(Included to be precautionary)**	**Species:** • Atlantic salmon; • Freshwater pearl mussel (*Margaritifera margaritifera*); and • Otter.	• To ensure that the qualifying features of the River Dee SAC are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and • To ensure that the integrity of the River Dee SAC is restored by meeting objectives for each qualifying feature: o Maintain the population of Atlantic salmon, including range of genetic types, as a viable component of the site; o Maintain the distribution of Atlantic salmon throughout the site; and o Maintain the habitats supporting Atlantic salmon	✓	X	X	X

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				within the site and availability of food.				
Fowlsheugh SPA [UK9002271]	Scotland	58.1 km	**Species:** • Razorbill, (Breeding)*; • Common Guillemot (Breeding)*; • Fulmar, (Breeding)*; • Herring gull, (Breeding)*; and • Black-legged kittiwake, (Breeding)*.	• To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and • To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within the site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; and • No significant disturbance of the species.	X	X	X	✓
Outer Firth of Forth and St Andrews Bay Complex SPA [UK9020316]	Scotland	85.1 km	• Species: • Atlantic puffin (Breeding)*; • Common guillemot (Breeding & non-breeding)*; • Razorbill (Non-breeding); • Herring gull • Red-throated diver(Non-breeding); • Slavonian grebe (*Podiceps auratus*) (Non-breeding); • Common eider (Non-breeding); • Long-tailed duck (*Clangula hyemalis*) (Non-breeding)^; • Common scoter (Non-breeding)^; • Velvet scoter (Non-breeding)^; • Common goldeneye ^ (Non-breeding);	• To ensure that the qualifying features of the Outer Firth of Forth and St Andrews Bay Complex SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of the Outer Firth of Forth and St Andrews Bay Complex SPA is restored in the context of environmental changes by meeting objectives for each qualifying feature: ○ The populations of the qualifying features are viable components of the Outer Firth of Forth and St Andrews Bay Complex SPA; ○ The distribution of the qualifying features is maintained throughout the site by avoiding significant	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
			• Red-breasted merganser (*Mergus serrator*) (Non-breeding)^; • Common tern (Breeding); • Arctic tern (Breeding); • European shag (Breeding)*; • Northern gannet (*Morus bassanus*) (Breeding); • Black-legged kittiwake (Non-breeding)*; • Manx shearwater (*Puffinus puffinus*) (Breeding)*; • Herring gull (Breeding & non-breeding); • Common Gull (*Larus canus)*;* • Little Gull (*Larus minutus)*; and* Black-headed Gull (*Larus ridibundus)*.*	disturbance of the species; and ○ The supporting habitats and processes relevant to qualifying species and their prey resources are maintained, or where appropriate restored, at the Outer Firth of Forth and St Andrews Bay Complex SPA.				
Moray Firth SAC [UK0019808]	Scotland	92.5 km	**Species:** • Bottlenose dolphin (*Tursiops truncatus*). **Habitat:** • Subtidal sandbanks.	• To ensure that the qualifying features of Moray Firth SAC are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of Moray Firth SAC is maintained or restored in the context • of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: For bottlenose dolphin ○ 2a. The population of bottlenose dolphin is a viable component of the site; ○ 2b. The distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance; and	X	✓	X	X

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				○ 2c. The supporting habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin are maintained.				
Northumberland Marine SPA [UK9020325]	England	107.2 km	**Species:** • Atlantic puffin, (breeding); • Arctic tern, (breeding); • Common guillemot (breeding); • Sandwich tern (breeding); • Great cormorant (*Phalacrocorax Carbo*), (breeding)*; • Common tern, (breeding); • [redacted] (breeding); • Roseate tern (breeding); • European shag (breeding)*; • Black-headed gull (breeding)l*;and • Black-legged kittiwake, (breeding) *.	• The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features; • the supporting processes on which the habitats of the qualifying features rely; • the populations of each of the qualifying features; and • The distribution of qualifying features within the site.	X	X	X	✓
Farne Islands SPA [UK9006021]	England	117.9 km	**Species:** • Atlantic puffin (breeding)*; • Arctic tern, (Breeding); • Common tern, (Breeding); • Guillemot (Breeding); • Roseate tern (Breeding); • Sandwich tern (Breeding) • Black-legged kittiwake, (breeding) *; • European shag (breeding)*; and • Great cormorant , (breeding)*.	• The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features; • the supporting processes on which the habitats of the qualifying features rely;	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				• the populations of each of the qualifying features; and • the distribution of qualifying features within the site.				
Forth Islands SPA [UK9004171]	Scotland	121.4 km	**Species:** • Atlantic puffin (breeding); • Razorbill , (breeding)*; • Arctic tern, (breeding); • Common tern , (breeding); • Cormorant , (breeding)*; • Gannet (breeding); • Common Guillemot, (breeding)*; • Herring gull, (breeding)*; • Black-legged kittiwake, (breeding)*; • Lesser black-backed gull (*Larus fuscus*), (breeding); • Roseate tern, (breeding); • Sandwich tern, (breeding); and • European shag, (breeding).	• To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and • To ensure for the qualifying species that the following are maintained in the long term: o Population of the species as a viable component of the site; o Distribution of the species within site; o Distribution and extent of habitats supporting the species; o Structure, function and supporting processes of habitats supporting the species; and o No significant disturbance of the species.	X	X	X	✓
St Abb's Head to Fast Castle SPA [UK9004271]	Scotland	122.1 km	**Species** • Razorbill , (breeding)*; • Common Guillemot (breeding)*; • Herring gull, (breeding)*; • Kittiwake, (breeding*; and • Shag, (breeding)*.	• To ensure that the qualifying features of the St Abb's Head to Fast Castle SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of the St Abb's Head to Fast Castle SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				○ 2a: The populations of the qualifying features are viable components of the St Abb's Head to Fast Castle SPA; ○ 2b: The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and ○ 2c: The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at the St Abb's Head to Fast Castle SPA.				
East Caithness Cliffs SPA [UK9001182]	Scotland	122.2 km	**Species:** • Razorbill , (breeding)*; • Common Guillemot (breeding)*; • Herring gull, (breeding)*; • Shag, (breeding)*; • Kittiwake, (breeding)*; • Peregrine (*Falco peregrinus*), (breeding); • Cormorant, (breeding)*; • Fulmar, (breeding)*; and • Great black-backed gull (*Lauris marinus)*.*	• To ensure that the qualifying features of the East Caithness Cliffs SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of the East Caithness Cliffs SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: ○ 2a: The populations of the qualifying features are viable components of the East Caithness Cliffs SPA; ○ 2b: The distribution of the qualifying features is maintained throughout the site by avoiding significant	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				disturbance of the species; and ○ 2c: The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at the East Caithness Cliffs SPA.				
Southern North Sea SAC [UK0030395]	England	133.1 km	**Species:** • Harbour Porpoise.	• To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters; and • In the context of natural change, this will be achieved by ensuring that: ○ Harbour porpoise is a viable component of the site; ○ There is no significant disturbance of the species; and ○ The condition of supporting habitats and processes, and the availability of prey is maintained.	X	✓	X	X
North Caithness Cliffs SPA [UK9001181]	Scotland	141 km	**Species** • Atlantic puffin (breeding)*; • Razorbill , (breeding)*; • Peregrine , (breeding); • Kittiwake (breeding)*; • Common Guillemot (breeding)*; and • Fulmar, (breeding)*.	• To ensure that the qualifying features of the North Caithness Cliffs SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and • To ensure that the integrity of the North Caithness Cliffs SPA is restored in the context of environmental changes by meeting	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				objectives 2a, 2b and 2c for each qualifying feature: ○ 2a The populations of the qualifying features are viable components of the North Caithness Cliffs SPA; ○ 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and ○ 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at North Caithness Cliffs SPA.				
Hoy SPA [UK9002141]	Scotland	165.6 km	**Species** • Atlantic puffin (breeding)*; • Arctic skua breeding*; • Black-legged kittiwake breeding* ; • Common guillemot, breeding*; • Great black-backed gull (Larus marinus) breeding*; • Great skua (Stercorarius skua) breeding*; • Northern fulmar, breeding*; • Peregrine, breeding; and • Red-throated diver, breeding.	• To ensure that the qualifying features of Hoy SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and • To ensure that the integrity of Hoy SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: ○ 2a. The populations of the qualifying features are viable components of the Hoy SPA; ○ 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				○ The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Hoy SPA.				
Cape Wrath SPA[UK9001231]	Scotland	215.2 km	**Species** • Atlantic puffin (breeding)*; • Black-legged kittiwake (breeding)*; • Common guillemot (breeding)*; • Northern fulmar (breeding)*; and • Razorbill , (breeding)*.	• To ensure that the qualifying features of the Cape Wrath SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. • To ensure that the integrity of the Cape Wrath SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: ○ 2a. The populations of the qualifying features are viable components of the Cape Wrath SPA; ○ 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and ○ 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Cape Wrath SPA.	X	X	X	✓
Fair Isle SPA [UK9001233]	Scotland	221.8 km	**Species** • Atlantic puffin (breeding)*;	• To ensure that the qualifying features of the Fair Isle SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
			• Arctic skua (Stercorarius parasiticus) (breeding) *; • Arctic tern (breeding)*; • Black-legged kittiwake (breeding)*; • Common guillemot (breeding)*; • European shag (breeding)*; • Fair Isle wren (*Troglodytes troglodytes fridariensis*) (breeding); • Great skua (breeding)*; • Northern fulmar (*Fulmaris glacialis*) (breeding)*; • Northern gannet (breeding)* ; and • Razorbill (breeding)*.	• 2. To ensure that the integrity of the Fair Isle SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: ○ 2a The populations of the qualifying features are viable components of the Fair Isle SPA; ○ 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and ○ 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at the Fair Isle SPA.				
Sule Skerry and Sule Stack SPA [UK9001234]	Scotland	230.779	**Species** • Atlantic puffin (breeding)* • Common guillemot , (breeding)*; • European shag (*Gulosus Aristotelis*),(breeding)* ; • European storm petrel (*Hydrobates pelagicus*), (breeding)*; • Leach's petrel (*Oceanodroma leucorhoa*), (breeding)*; • Northern gannet, (breeding)*; • European shag, (breeding)*; and • Storm petrel, (breeding).	• To ensure that the qualifying features of the Sule Skerry and Sule Stack SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and • 2. To ensure that the integrity of Sule Skerry and Sule Stack SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: ○ 2a. The populations of the qualifying features are viable components of the Sule Skerry and Sule Stack SPA; ○ 2b. The distribution of the qualifying features is	X	X	X	✓

European Site Name & Code	Country	Distance from RLB (closest point)	Features	Conservation Objectives	Annex II Migratory Fish	Annex II Marine Mammals	Annex I Habitats	Annex I Bird Species & regularly occurring migratory species
				maintained throughout the site by avoiding significant disturbance of the species; and ○ 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Sule Skerry and Sule Stack SPA				
Grey text shows species that are screened out of the assessment due to no impact pathway. Please see Section 3.1 for more details. * denotes a qualifying feature that is a breeding seabird assemblage feature ^ denotes a non-breeding seabird assemblage feature								

5. Step 2: Identification of Potential Impact Pathways with Relevant European Sites and Features

5.1. Potential Impact Pathways

Impacts have been established based on industry experience and with reference to the list of marine pressures established by the JNCC Marine Pressures-Activities Database v.1.5 (2022), OSPAR Intercessional Correspondence Group on Cumulative Effects (ICG-C) (OSPAR, 2011), Natural England's advice on operations for relevant designated sites and NatureScot's Feature Activity Sensitivity Tool (FeAST) (NatureScot, 2025b). The impacts (pressures) considered relevant for the installation, operation and decommissioning of subsea cables are presented in **Table 5-1**. Note that impacts are given in black text, while the corresponding JNCC pressures are provided in grey text in the first column of **Table 5-1**.

The ZoI for each of the impacts will be used during the Screening assessment to determine whether there is likely to be a source-receptor-pathway between the Proposed Development's licensable activities and the relevant qualifying feature of a European Site. The ZoI is defined as the spatial extent over which the pathway could affect the receptor, and has been established quantitatively where possible, or qualitatively based on evidence from analogous projects, post-construction monitoring data and literature reviews. Rationale for establishing the ZoI is provided in **Table 5-1**. Conservative estimates have been used when calculating the final ZoI for each impact to ensure that all potentially sensitive receptors are accounted for in the HRA Assessment process and that the 'worst case scenario' is taken into consideration in line with the precautionary approach.

It should be noted that only receptors identified within the relevant search areas (as defined in **Section 4.1**) have been included in **Table 5-1**.

Table 5-1: Potential impact pathways between source and receptor

Key: C = construction, O&M = operation & maintenance, D = decommissioning

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
1. Temporary habitat loss / seabed disturbance Abrasion/disturbance of the substrate on the surface of the seabed Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion	• Trenchless construction technique; • Anchoring; • Pre-sweeping; • PLGR; • Boulder clearance; • UXO Identification; • Cable lay and burial; • Cable repair; • Cable removal; and • Temporary seabed deposits.	✓	✓	✓	The laying of cables, including all activities listed under Source, will lead to seabed abrasion and disturbance of the substrate on the surface of the seabed (OSPAR, 2023). The maximum footprint of installation activities is outlined in **Table 2-1.** Beyond this direct footprint of installation activities, low intensity physical disturbance may also occur e.g. anchor handling which may be up to 0.5–1 km from the vessel. Most Proposed Development activities that penetrate the seabed will present a temporary impact i.e., will only be undertaken once for a short duration and the seabed will be able to recover after the activity. Some activities will occur in the same footprint and will be separated by a couple of months e.g., PLGR followed by trenching. Abrasion and penetration of the substrate could result in the localised loss or damage to seabed habitats and therefore this receptor has been screened in. This does not directly remove or disturb the habitats of birds, marine mammals or migratory fish. However, there may be an indirect effect on the availability of their prey species. Therefore, this pathway is screened out for these receptors and the indirect effects of changes in prey availability is considered under pathway 3.	**OUT**	**OUT**	**OUT**	**IN**	Within RLB
2. Permanent habitat loss Physical change (to another seabed or sediment type)	• Deposit of external cable protection.	✓	✓	✓	This impact relates to the permanent change of one marine habitat type to another marine habitat type, through the change in substratum, including to artificial material (e.g., concrete). This involves the permanent loss of one marine habitat type but the creation of another. Associated activities include the installation and decommissioning of infrastructure (e.g., surface laid cables) and the placement of cable and scour protection where soft sediment habitats are replaced by hard/coarse substratum habitats. The materials used for external protection of cables such as concrete	**OUT**	**OUT**	**OUT**	**IN**	Within RLB

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					mattresses, rock placement, grout or rock bags, fronded concrete mattresses, etc. will result in a change of habitat type within the footprint of this activity. The change of the seabed to another substrate will result in a permanent loss of habitat in locations where external cable protection is required i.e., at cable crossings and in areas of insufficient burial or cable exposure. Therefore, the habitats receptor has been screened in. Permanent habitat loss on the seabed does not directly remove or disturb the habitats of birds, marine mammals or migratory fish. However, there may be an indirect effect on the availability of their prey species. Therefore, this impact is screened out for all receptors and the indirect effects of changes in prey availability is considered under pressure 3.					
3. Changes in distribution of prey species	• Activities that lead to Impact 1; and • Activities that lead to Impact 2.	✓	✓	✓	Changes in prey availability is a potential indirect impact which could arise during any phase of the project life cycle. Activities that lead to temporary or permanent habitat loss (as outlined under pathway 1 and pathway 2) affect seabed habitats which could affect the availability of prey. Disturbance of the seabed during the spawning season for species with a demersal life stage (such as sandeel and herring), temporary or permanent habitat loss for such species could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species for birds, marine mammals and migratory fish. The indirect effects of EMF (as described in pathway 7) could also reduce affect the distribution and availability of prey for all receptors. There is no source-pathway-receptor between changes in distribution of prey species and habitats.	**IN**	**IN**	**IN**	**OUT**	Within RLB
4. Temporary increase and deposition of suspended sediments Changes in suspended solids (water clarity)	• Trenchless construction; • Anchoring; • Pre-sweeping; • PLGR; • Boulder clearance; • UXO identification;	✓	✓	✓	This impact relates to changes in water clarity (or turbidity) due to changes in suspended sediment concentrations (SSC) and smothering of seafloor habitats as a result of settled-out suspended sediments. During cable installation sediment re-suspension will occur followed by subsequent re-deposition on the seabed. The siltation rates will depend on the hydrological conditions and the sediment particle size distribution. A greater sediment dispersion distance means the sediment will be more thinly dispersed over a wider area, whilst a smaller sediment dispersion distance gives a high deposition depth over a smaller distance (OSPAR, 2023).	**IN**	**OUT**	**OUT**	**IN**	15 km from RLB

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
Smothering and siltation rate changes	• Cable lay and burial; • Cable repair; • Cable removal; • Deposit of external cable protection; and • Temporary seabed deposits.				The dispersal rate is high in the vicinity of the Project with mean tidal excursions along the RLB ranging from approximately 4 km to 9.5 km (ABPmer, 2011). This represents the maximum distance a particle could theoretically travel over the average tidal cycle. Though tidal ellipses determine the dispersal of sediment and the potential distance of travel, the range of excursion does not equate with the distance over which this impact may be exerted, rather, that is determined by a combination of factors including sediment particle size and mass and local hydrology. **Chapter 6: Marine Physical Processes** concluded that the maximum distance that suspended sediment will travel from the source is 13.9 km. Therefore, a ZoI of 15 km either side of the RLB has been applied as a precautionary approach. Increased sedimentation following construction, maintenance and decommissioning activities may impact habitats and therefore, this receptor is screened in. Benthic communities which are often sessile and unable to avoid the effects of increased sediment load could indirectly lead to changes in prey availability (considered under Impact 3). Visually foraging birds particularly diving species, which depend on clear water to identify and catch potential prey can be affected by an increased turbidity by reducing their foraging capability (Cook and Burton, 2010). As such, this impact has been screened in for ornithology receptors. An increase and deposition of suspended sediment may negatively affect egg survival rates of spawning migratory fish by decreasing intra-gravel flow velocities and oxygen concentrations (Pattison *et al*., 2015). However, as the migratory fish species (Atlantic salmon) do not spawn in the sea and there are no SACs with migratory fish as qualifying features overlapping the landfall, ,there is not considered to be a source-receptor pathway. In addition, migratory fish are adapted to highly turbid estuarine environments. As such, this receptor is screened out. Marine mammals typically inhabit turbid environments (Au *et al.,* 2000) and don't rely solely on vision for detecting prey and navigation through the water column (i.e., echolocation in cetaceans and sensitive vibrissae in seal and otters). As a					

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					result, there is not considered to be a source-receptor pathway, and this receptor is screened out.					
5. Water flow (tidal current) changes, including sediment transport considerations	• Deposit of external cable protection.	✓	✓	✓	Structures placed in the marine environment immediately interact with the local current regime. The use of external cable protection which is elevated above the seabed can potentially result in localised changes in water flow resulting in turbulence (especially at peak flow) and the possible formation of scour pits around the structure. Though the impact of this is expected to be highly localised and negligible in magnitude there is a possibility that scour will result in localised degradation of soft sediment habitats and the associated benthic communities therefore, the habitats receptor is screened in. Unlike habitats and benthic communities, marine mammals, birds and migratory fish are highly mobile and are not restricted to the seabed and therefore there is not considered to be a source-receptor pathway.	**OUT**	**OUT**	**OUT**	**IN**	Within RLB
6. Temperature changes – local	• Operational Cables.		✓		During the operation of an HVDC cable heat losses occur because of the resistance in the cable/conductor. This can cause localised heating of the surrounding environment (i.e., sediment for buried cables, or water in the interstitial spaces of external cable protection). There are no specific regulatory limits applied to temperature changes in the seabed, although a 2°C change between seabed surface and 0.2 m depth is used as a guideline in Germany (Primo Marine, 2019). Calculations have been undertaken for the EGL 3 cable system to determine the heat profile under full load and at maximum operating temperature (the worst-case scenarios) and can be seen in **Appendix 3C: EGL 3 Heat Calculations**. Calculations assumed a burial depth of 2 m and a maximum operating temperature of the cables of 90 °C. Heat plots illustrating that heat rapidly dissipates from the cables are presented in the **Chapter 3: Project Description.** Seabed surface temperatures will not change from the predicted ambient temperature of 12 °C. Sediment temperature at 0.5 m depth, immediately above the cables, is predicted to reach 20°C. It should be noted that the actual system is unlikely to reach these temperatures as the system would have to operate at full load continuously for an extended period of time (months/years) to meet these temperatures. In reality, the system will not be at full load for this long and therefore the temperature will fluctuate and be unlikely to reach these maximums.	**OUT**	**OUT**	**OUT**	**OUT**	Within RLB

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					As the temperature changes will be localised to the immediate environment surrounding the cables and restricted to below 0.5 m and deeper (below the burrowing depth of most infauna) they will be within the fluctuations associated with natural temperature fluctuations. There will be no warming of the water column. Therefore, there is not considered to be a source-pathway-receptor for habitats, marine mammals, birds or migratory fish. There will be no indirect impacts on prey species.					
7. EMF	• Operational Cables.		✓		The burial and bundling of cables help to reduce the strength of EMF when compared to surface laid cables. An EMF study was undertaken for the EGL 3 cable system **(Appendix 3A: Electric and Magnetic Field Assessment Assessment**). It calculates that EMF fields on the seabed immediately above the cables will reach 122.8 µT (or 76.4 µT without the Earth's magnetic field) but will attenuate to background levels within 0.520 m of the bundled cables (when cables are buried at 1 m depth). The submarine cables will be buried within the sediment at a minimum depth of 1 m and at a maximum depth of 2.5 m. Habitats (for which there is no source-pathway-receptor) have been screened out. Although some bird species may use the earth's magnetic field for navigation during migration, this will not be impacted by EMF from subsea cables due to the range of impact being localised to the surrounding area of the cable underwater. There is not considered to be a source-pathway-receptor for birds, and they are not assessed further for this impact. It is acknowledged that cetaceans use magnetic cues, such as the earth's geomagnetic field, to navigate. The mechanism for how this is achieved is still unknown (BOEMRE, 2011). This localised change in the magnetic field may temporarily affect sensitive species as they cross the cables or pass alongside their length and may temporarily reduce their navigational ability within the zone of effect. No evidence of magnetic sensitivity has been reported in otters (BOEMRE., 2011), therefore, there is not considered to be a source-receptor pathway, and they are not assessed further for this impact. Some migratory fish species such as Atlantic salmon can use the earth's magnetic field for navigation and movements over subsea cables may result in a temporary change in swimming direction or avoidance behaviour possibly leading	**OUT**	**IN**	**IN**	**OUT**	Within RLB

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					to a delay to migration (Gill and Bratlett, 2011; Gill *et al*., 2012), therefore this receptor has been screened in. Some species of molluscs are also able to detect electric and magnetic fields. As benthic invertebrates are typically slow moving or sessile organisms that live on or within the seabed, they are exposed to the highest levels of EMF. However, the effects of EMF on invertebrates have not yet been well studied (Albert *et al*., 2020). As benthic invertebrates are prey items for some fish species, which in turn are predated on by other fish, marine mammals and birds, Indirect effects of EMF may impact on the availability and distribution of prey species, which is considered under impact 3.					
8. Introduction or spread of marine invasive non-native species (MINNS)	• Deposit of external cable protection; and • Presence of Project vessels.	✓	✓		This impact refers to the direct or indirect introduction of non-native species, e.g., Chinese mitten crabs (*Eriocheir sinensis*), slipper limpets (*Crepidula fornicate*), Pacific oyster (*Crassostrea gigas*), and their subsequent spreading and out-competing of native species. Ballast water discharge, hull fouling and stepping stone effects from offshore structures may facilitate the spread of such species. The introduction of marine invasive non-native species (MINNS) (e.g., through discharge of ballast water from Proposed Development vessels) will be managed under the International Convention for the Control and Management of Ship's Ballast Water and Sediments. Vessel contractors will complete a biosecurity risk assessment prior to mobilisation. Best biosecurity practice for marine for commercial operations will be followed by all vessels associated with the Proposed Development to minimise the risk of MINNS spread. All materials used for cable protection will be sufficiently sterilised prior to use and seabed deposits will be inert with no biologically active material. All materials used for remedial works will be procured from reputable sources. Nonetheless, there is potential for any external cable protection placed at cable crossings or during maintenance in areas of soft substrate to act as a stepping stone for MINNS that favour hard substrates. The placement of hard materials (such as rock protection) could introduce a new niche that increases connectivity with other natural or artificial hard habitats within the dispersal range of benthic species. However, considering the implementation of the control measures required to ensure legal compliance, the introduction or spread of MINNS is not anticipated. Therefore, this impact has been screened out for habitats. There is not considered to be a source-pathway-receptor for birds, fish or marine mammals.	**OUT**	**OUT**	**OUT**	**OUT**	

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
9. Barriers to species movement	• Trenchless construction; • Anchoring; • Pre-sweeping; • PLGR; • Boulder clearance; • UXO Identification; • Cable lay and burial; • Cable repair; • Cable removal; and • Temporary seabed deposits.	✓	✓	✓	This impact pathway relates to the physical permanent obstruction of species movements and including local movements (within and between roosting, breeding, feeding areas) and regional/global migrations (e.g., birds, migrating fish and marine mammals). This includes movements across open waters from OWFs, wave or tidal array devices, mariculture infrastructure or fixed fishing gears. The species affected are mostly birds, fish, and mammals (Marlin., 2023). Waders and seaducks can be directly impacted by artificial structures causing an alteration of migration flyways or local flight passes, e.g., between roosting and feeding habitat. Barrier effects to migratory movements are mainly discussed in relation to OWF development (Drewitt and Langson., 2008). The Proposed Development is the construction and operation of subsea power cables. There will be no physical permanent structures. Use of vessels will be transient. No pathway has been identified for bird receptors. There is not considered to be a source-pathway-receptor for habitats and therefore, this receptor is screened out. No pathway has been identified for marine mammals or migratory fish. Cables will be buried there will be no permanent structures obstructing species movements within the water column. Even if cable protection is required, this will be placed on the seabed and animals will be able to move over it. Temporary underwater noise changes generated by survey equipment and vessel movement is the main barrier for these receptors and is considered in Impact 10.	**OUT**	**OUT**	**OUT**	**OUT**	
10. Underwater noise changes	• Presence of Project vessels; and • Geophysical surveys.	✓	✓	✓	Project vessels and equipment will generate continuous underwater noise which may result in the temporary behavioural disturbance and displacement of marine mammals, migratory fish, and diving bird species such as seaducks, grebes and divers including red-throated diver. With respect to marine mammals, the Oslo and Paris (OSPAR) Convention considered that sound associated with the installation, removal or operation of submarine cables is less harmful compared to impulsive sound activities such as seismic surveys, military activities or construction work involving pile driving. There is not considered to be a source-pathway-receptor for habitats and therefore, this receptor is screened out. With respect to ornithological receptors, underwater noise directly influences water column feeders as these species are submerged for longer periods when	**IN**	**IN**	**IN**	**OUT**	5 km (JNCC, 2020)

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					diving in search for prey on the seabed, in comparison to other bird function groups that feed in the surface (Natural England, 2024). With respect to migratory fish, species that have a swim bladder or other air bubble that is close to the ear can detect sound pressure as well as particle motion and are therefore more likely to be affected by an increase in underwater noise (Popper *et al*., 2014). A precautionary 5 km ZoI has been used. This is the effective deterrent range (EDR) for geophysical surveys as recommended by (JNCC, 2020) for harbour porpoise. This has been used as a proxy for marine mammals, migratory fish and birds as it is deemed a worse case range. The effects from continuous underwater noise will be lower than this as detailed in **Appendix 10A: Underwater Noise Modelling Technical Report.**					
11. Visual / physical disturbance or displacement Above water noise	• Presence of Project vessels; and • Geophysical surveys.	✓	✓	✓	Vessels, vehicles and people movement can create visual stimuli which can evoke a disturbance response in mobile species such as seabirds. The magnitude of the impact will depend on the nature and scale/intensity of the activity (e.g., location and timing of operation). Diving species such as red-throated divers, and seaducks, geese and swans such as shelduck and pintail, and waders are recognised as being highly sensitive to noise and visual disturbance, such as that caused by vessel traffic (Atterbury *et al.,* 2021). Once flushed, they may not rapidly resettle. Therefore, SNCBs recommend a 4 km displacement buffer for divers and seaducks (MIG-Birds, 2022). There is not considered to be a source-pathway-receptor for habitats and therefore, this receptor is screened out. The physical presence of the Project's vessels and equipment during all phases of the Proposed Development have the potential to disturb marine mammals, birds and fish. Therefore, these receptors are screened in.	**IN**	**IN**	**IN**	**OUT**	4 km (MIG-Birds, 2022)
12. Collision with project vessels	• Presence of project vessels and equipment.	✓	✓	✓	There are known incidents of marine mammals colliding with fast moving vessels. However, it is largely recognised that the key factors contributing to collision between marine mammals and vessels are the presence of both in the same area and vessel speed (see Schoeman *et al.,* 2023 for review). Injuries to marine mammals from vessel strikes are species-dependent but generally are more severe at higher impact speeds (Wang *et al.,* 2007). Given that there are known	**OUT**	**IN**	**OUT**	**OUT**	Within RLB

Pathway	Source	Project Phase			Pathway Description	Receptor and initial Screening determination – 'IN' if there is potential for connectivity between source and receptor				Maximum ZoI
		C	O&M	D		Ornithology	Marine Mammals	Migratory Fish	Habitats	
					incidents of collision between marine mammals and vessels, this receptor is screened in. Given that project vessels will be travelling at speeds no greater than 5 knots, or travelling within established shipping lanes, and that birds and migratory fish are highly mobile and more manoeuvrable than marine mammals, no pathway for effect is considered and these receptors are screened out. There is not considered to be a source-pathway-receptor for habitats and therefore, this receptor is screened out.					
13. Accidental Spills	• Presence of Project vessels.	✓	✓	✓	During construction, accidental spillage may occur directly into the water column. Materials spilled may disperse as a plume on the water surface, within the water column or fall directly to the seabed. The primary chemicals of environmental concern in vessel oil and fuel are polycyclic aromatic hydrocarbons (PAHs). Deliberate discharges of oil or oil/water mixtures from ships are prohibited within the Northwest European Waters Special Area, established by the International Maritime Organization under MARPOL Annex I in 1999. This includes all waters around the UK and its approaches. However, accidental discharges still occur. It is a requirement that Project vessels comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 which relate to pollution from oil from equipment, fuel tanks etc and release of sewage (black and grey waters). Compliance with international and national regulations will be sufficient to minimise the risk to the environment and therefore, this pathway has been screened out of the assessment.	**OUT**	**OUT**	**OUT**	**OUT**	
14. In-combination effects	• All activities.	✓	✓	✓	In-combination effects are likely to result where localised disturbance from more than one activity either occurs simultaneously resulting in a wider ZoI or consecutively within a restricted area resulting in an extension of the impact pathway. There is the possibility that the Proposed Development could overlap, temporally and spatially with other projects in the region or will occur within short succession of another project and as such all receptors have been screened in.	**IN**	**IN**	**IN**	**IN**	Within RLB

6. Step 3 and 4: Assessment of Step 3 and 4: Determination of LSE (as Standalone Project and In-Combination)

6.1. Step 3: Standalone Project

The relevant European Sites and qualifying features screened in (as shown in **Table 4-3**) are assessed against the potential impact pathways identified in **Table 5-1.** The ZoI outlined in **Table 5-1** will act as the maximum range for direct impacts to occur within a European Site however, where a qualifying feature is a mobile species which could travel within the ZoI, the effects on these species have been considered. Where it cannot be concluded that there will not be an LSE, that European Site and relevant qualifying feature will be progressed to a Stage 2 RIAA.

6.2. Step 4: In-combination Effects with Other Projects / Plans

In-combination impacts will be assessed as part of the Stage 2 RIAA of the HRA process for those sites for which it has been determined that there is the potential for LSE. The RIAA is provided in **Appendix 5B: Habitats Regulations Appraisal Stage 2 Report to Inform Appropriate Assessment**. If no potential for LSE has been identified for a site, then it is considered that there is no pathway for in-combination impacts to adversely affect the achievement of a site's conservation objectives.

For Screening, LSE in-combination has been considered for every designated site except for where there is no source-pathway-receptor between a qualifying feature and the potential impact.

Existing plans/projects that are built and operational prior to the construction phase of the Proposed Development have been classified as part of the baseline conditions and are not considered in the LSE in-combination assessment. Plans/projects that are proposed or under construction at the same time, or subsequent to when the Proposed Development is under construction will be considered in the LSE in-combination assessment.

The following activities are considered for the potential to contribute to in-combination impacts for the HRA process:

- Marine aggregate extraction sites;
- Dredging sites;
- Oil and gas structures and pipelines;
- OWFs;
- Cable projects;
- Carbon capture and storage and natural gas storage;
- Tidal energy;
- Wave energy;
- Tourism and recreation; and
- Marine licence applications.

Existing activities such as commercial fisheries, tourism and recreation, military practice areas and shipping and navigation, are sporadic or have continuous use of the region and are not necessarily licensable activities. However, they can exhibit pressure on designated sites. Whilst individual activities have not been identified, the pressure already exerted by these activities has been considered. When assessing in-combination impacts, pressure from these activities may contribute to the condition status of a European Site and therefore, the capacity for additional pressure from the Proposed Development may be lower. As such, the condition of European Sites and existing pressures have been reviewed using NatureScot's conservation advice and management, Natural England's conservation advice or JNCC's Conservation Objectives and Advice on Operations for the relevant site (where available).

To determine whether other plans/projects might interact with the licensable activities, common source-receptor pathways have been identified. The search area for other projects and plans that may contribute to in-combination effects from potential impacts to protected features of Designated Sites is taken from the ZoI outlined for various receptors in **Table 5-1**, unless no source-pathway-receptor exists. The exception to this is when considering underwater noise from OWF construction, which can propagate further than underwater noise from other types of plans/projects. In this case, the search area for underwater noise remains within the 5 km EDR, except for OWF construction, which follows the JNCC's recommended 26 km EDR for unmitigated piling (no noise abatement) (JNCC, 2020).

Plans and projects have been identified using the following publicly available data sources:

- The Crown Estate Scotland (TCE) Open Data Portal (TCE)The MMO Marine Licensing Portal (MMO)
- North Sea Transition Authority (NSTA) Open Data (NSTA)
- EMODNet Human Activities, Main Ports, Goods-Passengers-Vessels Traffic (EMODNet., 2023)
- Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) Oil and gas: environmental submissions and determinations (OPRED, 2025)

6.2.1.1. Stage 1 – establishing ZoI

Table 6-1: ZoI of cumulative effects assessment

Type of Project or activity	ZoI Criteria	Reasoning
OWFs including the Innovation and Targeted Oil & Gas (INTOG) leasing round	Up to 26 km from the RLB	26 km is the ZoI for the impact of 'underwater noise changes' from OWF piling, which is the largest ZoI for impacts associated with OWFs.
Cables and Pipelines	Up to 15 km from the RLB	15 km is the ZoI for the impact of 'temporary increase and deposition of suspended sediments' which is the largest ZoI for impacts associated with cables and pipelines.
Disposal sites, dumped munitions, military practice areas, rock placement protection	Up to 15 km from the RLB	Within the ZoI for cables and pipelines.

6.2.1.2. Stage 2: Screening of longlist

In accordance with PINS guidance (PINS, 2025) all proposed works have been allocated into "Tiers" reflecting their status of development, as shown in **Table 6-2**.

Table 6-2: Tiers used for screening of longlist

Tiers	Development Stage
Tier 1	• Projects under construction. • Permitted applications. • Submitted applications.
Tier 2	• Projects on MD-LOT programme of projects
Tier 3	• Projects on the Planning Inspectorate's programme of projects where a scoping report has not been submitted. • Identified in the relevant Development Plan and emerging Development Plans, with appropriate weight given as they near adoption, recognising that there will be limited information available on the relevant proposals. • Identified in other plans and programmes, as appropriate, which set the framework for future development consents or approvals, where such development is reasonably likely to come forward.

Other plans or projects that fall under the ZoI criteria in **Table 6-1** have been compiled into a longlist and screened to form a shortlist in **Table 6-3**. Note that all surrounding infrastructure that is already operational has been 'screened out', since the effects of the maintenance of operational projects has influenced the baseline in all relevant chapters (as listed in **Section 3.1)**.

Table 6-3: Screening of longlist

		"Other development" details					Stage 1		Stage 2		Stage 3
ID	Application Reference	Project	Type of Project	Distance from RLB	Status	Tier	Within ZoI?	Progress to Stage 2?	Overlap in temporal Scope	Scale and nature of development likely to have a significant effect?	Progress to Stage 3?
1	SCOP-0056	Bowdun OWF	OWF	5.78 km	Pre Application-Scoping Report	Tier 2	Within 26 km ZoI for OWFs	Yes	2029 (Scottish Government, 2024a)	Yes	Yes
2	00010686	Flora (INTOG) OWF	INTOG	19.65 km	Application-European Protected Species (EPS) Licence (for surveys)	Tier 1	No, only an EPS licence has been applied for with a ZoI of 5 km for underwater noise (Scottish Government, 2024d).	No	N/A	N/A	No
3	00010344	Morven OWF	OWF	1.98 km	Pre Application-Scoping Report	Tier 2	Within 26 km ZoI for OWFs	Yes	2028-2030, (Power Technology,2024)	Yes	Yes
4	00010861	Ossian OWF	OWF	2.66 km	Application-Environmental Impact Assessment (EIA) submitted	Tier 1	Within 26 km ZoIfor OWFs	Yes	2031-2033 (Scottish Government, 2024b)	Yes	Yes
5	06771 & 06870	NorthConnect	Cable	0 km / crosses	Licence expired	Tier 1	Within 15 km ZoI for cables	No (due to licence expiry)	N/A	N/A	No
6	00009943/00011033	Eastern Green Link 2 (EGL 2)	Cable	0 km / crosses	Licence granted	Tier 1	Within 15 km ZoI for cables	Yes	2029 (Scottish Government, 2025a)	Yes	Yes

7	00011091	Cenos FloatingOWF – transmission infrastructure	Export cable	0 km / crosses	Permitting – EIA Reports submitted	Tier 1	Within 15 km ZoI for cables	Yes	2030-2031 (Scottish Government, 2025b)	Yes	Yes
8	SCOP-0066	Aspen FloatingOWF – transmission infrastructure	Export cable	0 km / crosses	Pre-application	Tier 2	Within 15 km ZoI for cables	Yes	2028-2030 (Scottish Government, 2025c)	Yes	Yes
9	SCOP-0020	MarramWind OWF	OWF	0 km / crosses	Pre Application – Scoping Report	Tier 2	Within 26 km ZoI for OWFs	Yes	2029-2032 (Scottish Government 2023a)	Yes	Yes
10	00011026	Muir MhòrOWF– transmission infrastructure	Export cable	~3 km	Application – EIA Reports	Tier 1	Within 15 km ZoI for cables	Yes	2030-2033 (Scottish Government, 2024c)	Yes	Yes

It is noted that construction of NorthConnect has been placed on hold by the Norwegian Government, and the current Marine Licence for this project has expired (expiration date 2024). As no new MLA has been submitted or Marine Licence granted for the project, it is assumed that this project will not have a temporal overlap (occurring at the same time) in construction with the Proposed Development. Therefore, NorthConnect will not be assessed in-combination with the Proposed Development.

6.2.1.3. Stage 3 Information Gathering

Other plans or projects that are within the ZoI have been compiled into a shortlist (**Table 6-3**) and information on those that have been progressed to Stage 3 is presented in this section. Note that all infrastructure that is already operational has been scoped out since the effects of the maintenance of operational projects has influenced the baseline in all chapters.

The following four cable projects were progressed to Stage 3:

- EGL 2;
- Cenos Floating OWF– transmission infrastructure;
- Aspen Floating OWF – transmission infrastructure; and
- Muir Mhor OWF – transmission infrastructure.

The construction of EGL 2 will have a significant overlap with the construction of the Proposed Development. The project is also proposing a landfall in Sandford Bay. If works were to occur simultaneously there could be in-combination effects of temporary habitat loss / seabed disturbance, permanent habitat loss, changes in distribution of prey species, temporary increase and deposition of suspended sediments, water flow (tidal current) changes, including sediment transport considerations, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with project vessels. The marine licence for EGL 2 has been granted (application reference number: 00009943/00011033) (Scottish Government, 2025a). EGL 2 is expected to cease construction and be operational by 2029. A year of overlap in construction effects is therefore expected, since the Proposed Development is planned to begin construction in 2028.

Cenos Floating OWFs export cable corridor crosses the Proposed Development at KP 576, utilising the DC routing of NorthConnect within 12 NM to reduce the need for additional infrastructure (Scottish Government, 2025b). Cenos Floating OWF is currently in its permitting phase, having submitted EIA in January 2025 (application reference number: 00011091) (Scottish Government, 2025b), and is scheduled to commence construction from 2030, with operation in 2031. As such, there may be a temporal overlap in construction between the two projects. If works were to occur simultaneously there could be in-combination effects of temporary habitat loss / seabed disturbance, permanent habitat loss, changes in distribution of prey species, temporary increase and deposition of suspended sediments, water flow (tidal current) changes, including sediment transport considerations, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with project vessels.

Aspen Floating OWF is currently in pre-application, having submitted a Scoping Report in May 2025 (application reference number: SCOP-0066) (Scottish Government, 2025c), and is scheduled to begin construction in 2027 with operation commencing in 2030. As such, there may be a direct temporal overlap in construction between the two projects. The export cable corridor scoping boundary of Aspen Floating OWF overlaps with the Proposed Development and, due to the uncertainty of overlap in construction timelines, it is unclear as to which project would carry out cable installation first. If works were to occur simultaneously there could be in-combination effects of temporary habitat loss / seabed disturbance, permanent habitat loss, changes in distribution of prey species, temporary increase and deposition of suspended sediments, water flow (tidal current) changes, including sediment transport considerations, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with project vessels.

The export cable corridor of Muir Mhòr OWF is situated approximately 3 km from the RLB of the Proposed Development. Miur Mhòr OWF is currently in its application phase, having submitted an EIA in December 2024 (application reference number: 00011026) (Scottish Government, 2024c), and is scheduled to commence construction in 2030, with construction activities lasting up to four years (MMOWF Ltd, 2024). As such, there may be a temporal overlap in construction between the two projects and potential for in-combination effects from underwater noise changes and temporary increase and deposition of suspended sediments. However, as mobile receptors can travel within the ZoI of other impacts, European Sites with mobile receptors as qualifying features also have the potential for an in-combination effect from changes in distribution of prey species, EMF, visual / physical disturbance or displacement and collision with project vessels.

The following four OWFs were progressed to Stage 3:

- Bowdun OWF;
- Morven OWF;
- Ossian OWF; and
- MarramWind OWF.

Bowdun OWFis situated approximately 5.78 km away from the RLB and is planning to commence construction in 2028 with commissioning planned for 2032 (application reference number: SCOP-0056) (Scottish Government, 2024a). As such, there may be

a temporal overlap in construction between the two projects. If works were to occur simultaneously there could be in-combination effects from underwater noise changes and temporary increase and deposition of suspended sediments. However, as mobile receptors can travel within the ZoI of other impacts, European Sites with mobile receptors as qualifying features also have the potential for an in-combination effect from changes in distribution of prey species, EMF, visual / physical disturbance or displacement and collision with project vessels.

Morven OWF is situated approximately 1.98 km from the RLB and is due to commence construction in 2027, with commercial operation scheduled to begin in 2030 (Power Technology, 2024). Thus, there would be a temporal overlap in construction between the two projects. As Morven OWF is situated outside of the RLB of the Proposed Development, simultaneous construction or sequential construction in quick succession of the two projects has the potential for in-combination effects from underwater noise changes and temporary increase and deposition of suspended sediments. However, as mobile receptors can travel within the ZoI of other impacts, European Sites with mobile receptors as qualifying features also have the potential for an in-combination effect from changes in distribution of prey species, EMF, visual / physical disturbance or displacement and collision with project vessels. Due to the application stage of Morven OWF, there is no EIA available for this project and its project-alone impact to receptors is unknown. Therefore, Morven OWF cannot be assessed in-combination with the Proposed Development and will not be taken forward to Stage 4 of the in-combination assessment. As Morven OWF is at an earlier development stage than the Proposed Development it would need to complete a cumulative impact assessment and include the Proposed Development within its EIA.

Ossian OWF is a floating OWF situated approximately 2.66 km away from the RLB and is planning to commence construction in 2031 (application reference number: 00010861) (Scottish Government, 2024b). As such, there may be a temporal overlap in construction between the two projects. The simultaneous or sequential construction of the two projects gives rise to the potential for for in-combination effects from underwater noise changes and temporary increase and deposition of suspended sediments. However, as mobile receptors can travel within the ZoI of other impacts, European Sites with mobile receptors as qualifying features also have the potential for an in-combination effect from changes in distribution of prey species, EMF, visual / physical disturbance or displacement and collision with project vessels.

MarramWind OWF is currently in pre-application, having submitted the Scoping Report in January 2023 (application reference number: SCOP-0020) (Scottish Government, 2023a). Construction is scheduled to begin in 2029, following planning decisions in 2026, and MarramWind OWF is scheduled to be operational in 2032. Therefore, there may be a temporal overlap in construction between the two projects. The scoping boundary of MarramWind OWF overlaps with the RLB of the Proposed Development at Peterhead nearshore. If works were to occur simultaneously there could be in-combination effects of temporary habitat loss / seabed disturbance, permanent habitat loss, changes in distribution of prey species, temporary increase and deposition of suspended sediments, water flow (tidal current) changes, including sediment transport considerations, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with project vessels. However, due to the application stage of MarramWind OWF, there is no EIA available for this project and its project-alone impact to receptors is unknown. Therefore, MarramWind OWF cannot be assessed in-combination with the Proposed Development and will not be taken forward to Stage 4 of the in-combination assessment.

In summary, the following six projects were progressed to the Stage 4 assessment in **Section 6.2.2**:

- EGL 2;
- Cenos Floating OWF– transmission infrastructure;
- Aspen Floating OWF – transmission infrastructure;
- Muir Mhor OWF – transmission infrastructure;
- Bowdun OWF; and
- Ossian OWF.

6.2.2. Assessment of Relevant European Sites and Features

Table 6-4 to **Table 6-14** presents the assessment for LSE on the relevant European Sites identified during Screening Stage 1. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation. Each table considers LSE at a project level (Screening Step 3) and in-combination with other identified plans projects in proximity to the Proposed Development (Screening Step 4).

Table 6-4: Assessment of LSE on the Buchan Ness to Collieston Coast SPA (Within RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Common Guillemot (breeding)*; and • European shag, (breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Common guillemot and European shag feed mostly on sandeel and herring and they both have a moderate habitat specialisation score of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. However, since common guillemot have a large foraging range of 95.2km, they can forage elsewhere if there is a temporary and transient reduction in prey availability. European shag have a smaller foraging range of 23.7 km and may be impacted more by a temporary reduction in prey availability within the SPA however, this is still considered to be a sufficient range for finding alternative foraging habitat. Furthermore, **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise with regard to the impact 'changes in distribution of prey species', concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, in turn concluding that there will not be a significant impact on fish prey species for birds including common guillemot and European shag. As such, while intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. As the SPA is overlapping with the Proposed Development, there is a potential for direct impacts on the SPA. Common guillemot are water column feeders and therefore are potentially impacted by turbidity when they forage for prey. Cook and Burton *et al.* (2010) reported that these species are moderately sensitive to water turbidity in response to dredging operations. European shag are benthic feeders whose primary food is sandeel, so a reduction in visual clarity can impact the ability to forage. However, given their foraging ranges as mentioned under the impact above, there is considered to be sufficient alternative foraging habitat available to European shag. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is overlapping with the RLB, there is a potential for underwater noise from Proposed Development vessels and geophysical surveys to cause effect. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Common guillemots and European shag are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3. As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the North Sea region is already used by large ships and ferries and birds are therefore habituated to a certain degree to the presence of vessels. Using (EMODnet, 2024) vessel density surrounding the SPA is very high with some areas reaching 500+ hours / km^2 per month in 2023. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. The presence of Proposed Development vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period, can affect survival and productivity. Common guillemot and European shag are identified as being sensitive to noise and visual disturbance (Atterbury *et al*., 2021; Wade *et al*., 2016) and have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG Birds, 2022). As a result, they may not resettle quickly after escaping the vessel transit route (Atterbury *et al.* 2021). Fliessbach *et al* (2019) calculated the mean escape distances of various bird species from vessels. Common guillemot mean escape distance is 127 m. They are highly mobile and have a foraging distance of 95.2 km and can avoid Proposed Development vessels without significantly reducing their foraging grounds. European shag does not have a calculated mean escape distance. However, it is reasonable to assume that their escape distances would fall within the range of other species in the same functional group (divers, grebes and mergansers). Red-necked grebe exhibits the shortest mean escape distance at 271 m, while the common scoter has the largest escape distance at 1,600 m, suggesting that European shag would likely fall within this range. As the foraging range for European shag is 23.7 km, they will have less alternative habitat available than common guillemot. However, the Proposed Development overlaps with the SPA for an approximate area of 0.16 km^2, which is equivalent to 0.30% of the SPA, which has a total area of 54.01 km^2. This suggests that there would be sufficient alternative areas for foraging within the SPA. Sandford Bay experiences high levels of shipping due to its proximity to Peterhead Harbour. EMODnet Map viewer indicates vessel density average between 12-53 hours per km^2 for the period 2017-2023 (Peterhead harbour averaged 3,622 hours per km^2). Given the relatively low number of Proposed Development vessels (up to seven vessels present) in comparison to the already high vessel density, changes in vessel traffic associated with the Proposed Development will not be distinguishable above baseline conditions. The presence of Proposed Development's vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. Additionally, a jack-up barge, spud barge or multi-cat would be on site at the HDD exit for a period of 2-4 months. Other vessels used at this time may include a guard vessel, crew transfer vessels, a diver support vessel and tugs. Depending on the construction programme and any seasonal sensitivities at the landfall, there may be a break in works between the HDD finalisation and the cable pull-in. Each cable pull is expected to take up to seven days of 24 hour working, giving a total duration of 14 days. For this activity, up to seven vessels may be present including the larger cable lay vessel. As such, there could be repeated disturbance over an extended period of time. **Chapter 9: Intertidal and Offshore Ornithology** considered the nearshore impact vessel presence will have on common guillemot and European shag**.** Given the protection afforded to common guillemot and European shag during the breeding period and the high sensitivity of disturbance **the assessment identifies that there is a potential for LSE, and this will be screened in and taken forward to the Stage 2 RIAA**.	Potential for LSE
In-combination		The impacts assessed for the Buchan Ness to Collieston Coast SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF..	Potential for LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 43.2 km away from the Buchan Ness to Collieston Coast SPA and Ossian OWF is located 82.7 km away from the SPA. Using information from Aspen Floating OWF– transmission infrastructure HRA Stage 1 Screening report, the project is 17.9 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c). Using the offshore and intertidal EIA chapter for Muir Mhor OWF – transmission infrastructure, the project is 5.9 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance from these projects to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, common guillemot and European shag are likely to forage closer to the SPA to conserve energy and as common guillemot and European shag have breeding foraging ranges + 1SD of 95.2 km and 23.7 km respectively, they will be able to forage elsewhere, rather than within range of the other projects for impacts to occur. Furthermore, Ossian OWF and Bowdun OWF are outside of the breeding foraging range for European shag + 1SD (23.7 km) and individuals from the SPA are not expected to travel within proximity of the wind farms for impacts to occur. Additionally, Bowdun OWF and Ossian OWF are outside of the breeding foraging range for common tern + 1SD (26.9km) and common eider (21.5 km). There will be no detectable in-combination effect from these projects and the Proposed Development. Using information from project specific HRA Stage 1 Screening reports, EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a)., Cenos Floating OWF– transmission infrastructure (application reference number: 00011091) (Scottish Government, 2025b) are both 0 km away from the SPA. Given the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments and underwater noise changes. However, as common guillemot and European shag are sensitive to visual disturbance and the Proposed Development has the potential for an LSE alone from this impact, there is the potential for an LSE in-combination. **The assessment identifies there is a potential for an LSE in-combination between the Proposed Development, EGL 2 and Cenos Floating OWF– transmission infrastructure. These projects will be assessed in the Stage 2 RIAA.**	

Table 6-5: Assessment of LSE on Buchan Ness to Collieston SAC (1.77km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Temporary habitat loss / seabed disturbance	• Vegetated sea cliffs of the Atlantic and Baltic coasts.	The Proposed Development does not cross the boundary for this SAC and is beyond the ZoI for the potential impact. Therefore, there is no source-pathway-receptor at any stage of the development. **The assessment identifies that no LSE is predicted.**	No LSE
Permanent habitat loss		The Proposed Development does not cross the boundary for this SAC and is beyond the ZoI for the potential impact. Therefore, there is no source-pathway-receptor at any stage of the development. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6km as **Chapter 6: Marine Physical Processes** concluded the maximum SSC	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
suspended sediments		distance was 6km. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. **The assessment identifies that no LSE is predicted.**	
Water flow (tidal current) changes, including sediment transport considerations		The Proposed Development does not cross the boundary for this SAC and is beyond the ZoI for the potential impact. It has been considered that permanent structures, such as cable protection outside the SAC, could potentially impact water flow within the SAC. Where cable protection is not required, the seabed level will remain unchanged or similar to its pre-installation condition, eliminating the potential for this impact to occur. Where cable protection is required, the height of the structures on top of the seabed will result in a highly localised change of a small magnitude, immediately around the area where cable protection is applied. As this SAC is outside of the Proposed Development, there is no source-pathway- receptor at any stage of the development on the features of the SAC. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Buchan Ness to Collieston Coast SAC for the Proposed Development alone include: temporary habitat loss / seabed disturbance, permenant habitat loss, temporary increase and deposition of suspended sediments and water flow (tidal current) changes, including sediment transport considerations. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF– transmission infrastructure, Muir Mhor OWF– transmission infrastructure, Bowdun OWF and Ossian OWF. There is no pathway between the Proposed Development and other projects and plans to interact with the SAC at any stage of the development for the impacts of: • Temporary habitat loss / seabed disturbance. • Permanent habitat loss; and • Water flow (tidal current) changes, including sediment transport considerations. Therefore, there will be no potential for in-combination effects with other projects. Given the distance to the SAC (1.77 km from the RLB) and that any effect from the Proposed Development alone is unlikely to be noticeable against background levels, there will be no detectable in-combination effects from other plans/projects and the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-6: Assessment of LSE on the Ythan Estuary, Sands of Forvie and Meikle Loch SPA (8km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Sandwich tern, *(breeding)*; • Common tern (breeding); and • Common eider (non-breeding)^. ^denotes a qualifying feature that is a non-breeding waterfowl assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Common eider specialise in foraging on shellfish and crustaceans and have a high habitat specialisation score of 4 (MIG-Birds, 2022). This makes them more susceptible to changes in distribution of prey species than generalist feeders. Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (MIG-Birds, 2022). Common terns did not have a habitat specialisation score however, it can be presumed to be either moderate or high such as the rest of the functional group. Terns feed singly, in small parties or in widely scattered flocks in shallow water, often very close to the shoreline and being a generalist feeder makes them less susceptible to changes in distribution of prey species. **The assessment identifies that no LSE is predicted.**	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Chapter 8: Fish and Shellfish considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for sandwich tern, common eider and common tern. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Cook and Burton (2010) reported that terns are highly vulnerable to changes in turbidity, as vision plays an important role in the species' foraging capability. (Brenninkmeijer *et al.,* 2002) report for sandwich tern that food intake rate was lower in the most turbid waters compared to clearer waters at their study site in West Africa. Common tern, in general, are visually foraging birds, which depend on clear water to identify and catch potential prey. The foraging range of common tern, sandwich tern and common eider is 26.9 km, 57.5 km and 21.5 km respectively. Given that this SPA is 8 km from the RLB, individuals may travel to forage within the RLB of the Proposed Development however, individuals are likely to forage closer to the SPA to conserve energy. If individual birds do travel further than this, given their foraging ranges stated above, they will be able to avoid the RLB and forage elsewhere. If the Proposed Development does cause some displacement during foraging due to this impact, given the transient nature of activities, any displacement would be temporary and would not impact a species survival or population. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 8km from the RLB, the SPA will not be permanently or directly affected by underwater noise from Proposed Development vessels or geophysical surveys. However, birds are highly mobile and may still move within the EDR for foraging. Sandwich tern and common tern are considered to have low to moderate sensitivity to noise disturbance. The foraging range for sandwich tern, common tern and common eider is 57.5 km, 26.9 km and 21.5km respectively. Given that the distance to the site is 8km, foraging grounds are likely to be closer to the SPA. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the SPA has high levels of vessel activity, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024), suggesting that bird species within this site will already be habituated to underwater noise from vessels. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Sandwich tern, common tern and common eider are considered to have low to moderate sensitivity to visual disturbance. Seabirds (except black-headed gull and sandwich tern), seaducks, grebes and mergansers are identified as having a moderate to high sensitivity to disturbance. As covered above in underwater noise, given that the distance to the site is 8 km, they will be inclined to forage elsewhere during the works.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		It is also noted that the SPA has high levels of vessel activity, as covered above in Underwater Noise. The presence of Proposed Development's vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	
In-combination		The impacts assessed for the Ythan Estuary, Sands of Forvie and Meikle Loch SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF– transmission infrastructure, Aspen Floating OWF– transmission infrastructure, Muir Mhor OWF– transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 40.2 km away from the Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ossian OWF is located 81.2 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 8.0 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF– transmission infrastructure is 5 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b) and Aspen Floating OWF– transmission infrastructure is 6.8 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, sandwich tern, common tern and common eider are likely to forage closer to the SPA to conserve energy. Furthermore, Ossian OWF are outside of the breeding foraging range for sandwich tern + 1SD (57.5 km) and individuals from the SPA are not expected to travel within proximity of the wind farms for impacts to occur. Additionally, Bowdun OWF and Ossian OWF are outside of the breeding foraging range for common tern + 1SD (26.9km) and common eider (21.5 km). Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Ythan Estuary, Sands of Forvie and Meikle Loch SPA was not included in Muir Mhor OWF– transmission infrastructure HRA Stage 1 Screening report (application reference number: 00011026) (Scottish Government, 2024c) and is therefore no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-7: Assessment of LSE on the Loch of Strathbeg SPA (13.9km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Sandwich tern (Breeding); and • Common goldeneye, (Non-breeding)^. ^denotes a qualifying feature that is a non-	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. Common goldeneye are generalist feeders. Their diet can include aquatic plants, polychaetes, amphipods, aquatic insects and some small fish. Although they have a high habitat specialisation score of 4 (MIG-Birds 2022), being a generalist feeder makes them less susceptible to changes in distribution of prey species. Sandwich tern	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
	breeding waterfowl assemblage feature.	are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. **The assessment identifies that no LSE is predicted.** Note: **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for sandwich tern. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. . Given the distance to the RLB (13.9 km) and the foraging range of sandwich tern (57.5 km), preferred foraging grounds are likely to be closer to the SPA. No LSE is predicted. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; long-tailed duck. which is 30 km. Given that the SPA is 13.9 km from the RLB, preferred foraging grounds are likely to be closer to the SPA. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 13.9 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from Proposed Development vessels. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Seabirds (except black-headed Gulland arctic tern), seaducks, grebes and mergansers are identified as being sensitive to noise and visual disturbance (Atterbury *et al*., 2021, Wade *et al*., 2016). All these species have a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 or above (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9km foraging grounds are likely to be closer to the SPA. It is also noted that the SPA has high levels of vessel activity, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024), suggesting that bird species within this site will already be habituated to underwater noise from vessels. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		The assessment identifies that no LSE is predicted.	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Sandwich tern are considered to have low to moderate sensitivity to visual disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) scored the escape distance of bird species from 1-5 (where 1 is the lowest and 5 is the highest) and scored Arctic tern and sandwich tern a 1, meaning escape distances are between 0-200 m. Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9 km, preferred foraging grounds are likely to be closer to the SPA. Although no specific mean escape distance was provided for common goldeneye, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional groups. For seaducks, the common eider exhibits the shortest mean escape distance at 277 m, while the common scoter has the longest at 1,600 m, suggesting that common goldeneye would likely fall within this range. This suggests that the distance for visual disturbance is significantly less than 4 km for these species and that the ZoI is highly precautionary. It is also noted that the SPA has high levels of vessel activity, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024,), suggesting that bird species within this site will already be habituated to underwater noise from vessels. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**.) in comparison to the already high vessel density, changes in vessel traffic associated with the Proposed Development will not be distinguishable above baseline conditions. The presence of Proposed Development vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Loch of Strathbeg SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF– transmission infrastructure, Aspen Floating OWF– transmission infrastructure, Muir Mhor OWF– transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 67.0 km away from the Loch of Strathbeg SPA and Ossian OWF is located 102.3 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 14.3 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF– transmission infrastructure is 16 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF– transmission infrastructure is 41.6 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF– transmission infrastructure is 9.21 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, sandwich tern and common goldeneye are likely to forage closer to the SPA to conserve energy. Furthermore, Ossian OWF and Bowdun OWF are outside of the breeding foraging range for sandwich tern + 1SD (57.5 km) and individuals from the SPA are not expected to travel within proximity of the wind farms for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-8: Assessment of LSE on the Loch of Strathbeg Ramsar (13.9km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Sandwich tern, (Breeding); and • Common goldeneye, (Non-breeding)^. ^denotes a qualifying feature that is a non-breeding waterfowl assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Common goldeneye are generalist feeders. Their diet can include aquatic plants, polychaetes, amphipods, aquatic insects and some small fish. Although they have a high habitat specialisation score of 4 (MIG-Birds 2022), being a generalist feeder makes them less susceptible to changes in distribution of prey species. Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. **The assessment identifies that no LSE is predicted.** Note: **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for sandwich tern and goldeneye. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. Given the distance to the RLB (13.9 km) and the foraging range of sandwich tern (57.5 km), preferred foraging grounds are likely to be closer to the Ramsar. No LSE is predicted. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; common eider which is 21.5 km. Given that the Ramsar is 13.9 km from the RLB, preferred foraging grounds are likely to be closer to the Ramsar. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 13.9 km from the RLB, the Ramsar will not be permanently or directly affected by underwater noise from Proposed Development vessels. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Seabirds (except black-headed Gulland arctic tern), seaducks, grebes and mergansers are identified as being sensitive to noise and visual disturbance (Atterbury *et al*., 2021, Wade *et al*., 2016). All these species have a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 or above (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9km foraging grounds are likely to be closer to the Ramsar. It is also noted that the Ramsar has high levels of vessel activity, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024), suggesting that bird species within this site will already be habituated to underwater noise from vessels. Given the relatively low number of Proposed Development vessels in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Sandwich tern are considered to have low to moderate sensitivity to visual disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) scored the escape distance of bird species from 1-5 (where 1 is the lowest and 5 is the highest) and scored Arctic tern and sandwich tern a 1, meaning escape distances are between 0-200 m. Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9 km, preferred foraging grounds are likely to be closer to the Ramsar. Although no specific mean escape distance was provided for common goldeneye, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional groups. For seaducks, the common eider exhibits the shortest mean escape distance at 277 m, while the common scoter has the longest at 1,600 m, suggesting that common goldeneye would likely fall within this range. This suggests that the distance for visual disturbance is significantly less than 4 km for these species and that the ZoI is highly precautionary. Given that seabirds are highly mobile with large foraging ranges as detailed in **Table 4-2** they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group common eider(21.5 km). Given that the Ramsar is 13.9 km from the RLB, preferred foraging grounds are likely to be closer to the Ramsar. It is also noted that the Ramsar has high levels of vessel activity, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024,), suggesting that bird species within this site will already be habituated to underwater noise from vessels. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in vessel traffic associated with the Proposed Development will not be distinguishable above baseline conditions. The presence of Proposed Development vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Loch of Strathbeg Ramsar for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF– transmission infrastructure, Aspen Floating OWF– transmission infrastructure, Muir Mhor OWF– transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 67.0 km away from the Loch of Strathbeg Ramsar and Ossian OWF is located 102.3 km away from the Ramsar. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 14.3 km away from the Ramsar (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF– transmission infrastructure is 16 km away from the Ramsar (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF– transmission infrastructure is 41.6 km away from the Ramsar	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		(application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF– transmission infrastructure is 9.21 km away from the Ramsar (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the Ramsar from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the Ramsar, there will be no direct impacts within the Ramsar. Although birds are mobile receptors and may travel within range of the projects to be impacted, sandwich tern and common goldeneye are likely to forage closer to the Ramsar to conserve energy. Furthermore, Ossian OWF and Bowdun OWF are outside of the breeding foraging range for sandwich tern + 1SD (57.5 km) and individuals from the Ramsar are not expected to travel within proximity of the wind farms for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-9: Assessment of LSE on the Ythan Estuary and Meikle Loch Ramsar (15.6 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Sandwich tern, (breeding).	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. Note: **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for sandwich tern. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. A report by (Brenninkmeijer *et al.,* 2002) states that the food intake rate for [redacted] and sandwich tern was lower in the most turbid waters compared to clearer waters at their study site in West Africa. Given the distance to the RLB and the foraging range of sandwich tern (57.5 km), preferred foraging grounds are likely to be closer to the Ramsar Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede foraging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		The assessment identifies that no LSE is predicted.	
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 15.6 km from the RLB, the Ramsar will not be permanently or directly affected by underwater noise from Proposed Development vessels. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Seabirds (except black-headed gull and sandwich tern) are identified as being sensitive to noise and visual disturbance (Atterbury *et al*., 2021, Wade *et al*., 2016). All of these species have a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 or above (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5km respectively. Given that the distance to the site is 15.6 km foraging grounds are likely to be closer to the Ramsar. It is also noted that the North Sea region has high levels of vessel activity, with vessel density within the Ramsar typically ranged from 0-10 hours / km^2 per month in 2023 and some areas at the coast reaching 400+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period can affect survival and productivity. As this site is 15.6 km from the RLB, the Ramsar will not be permanently or directly affected by the presence of Proposed Development vessels. However, birds are highly mobile and may still move within the RLB. Seabirds (except black-headed gull and sandwich tern), seaducks, grebes and mergansers are identified as being sensitive to noise and visual disturbance (Atterbury *et al*., 2021, Wade *et al*., 2016). All of these species have a moderate to high disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 or above (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Sandwich tern are considered to have low to moderate sensitivity to visual disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) scored the escape distance of bird species from 1-5 (where 1 is the lowest and 5 is the highest) and scored arctic tern and sandwich tern a 1, meaning escape distances are between 0-200 m. Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern is 57.5km. Given that the distance to the site is 15.6 km, preferred foraging grounds are likely to be closer to the Ramsar. It is also noted that east coast has high levels of vessel activity, with vessel density within the Ramsar typically ranging from 0-10 hours / km^2 per month in 2023, with some areas at the coast reaching 500+ (EMODnet, 2024). Therefore, birds from this Ramsar will be habituated to a certain degree to the presence of vessels. Given the relatively low number of project vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. Furthermore, the presence of Proposed Development vessels will be temporary and transient, restricted to discreet activities and periods. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Ythan Estuary and Meikle Loch Ramsar for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF– transmission infrastructure, Aspen Floating OWF– transmission infrastructure, Muir Mhor OWF– transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 44.8 km away from the Ythan Estuary and Meikle Loch Ramsar and Ossian OWF is located 85.5 km away from the Ramsar. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 15.62 km away from the Ramsar (application reference number: 00009943/00011033) (Scottish Government, 2025a). Given the distance to the Ramsar from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the Ramsar, there will be no direct impacts within the Ramsar. Although birds are mobile receptors and may travel within range of the projects to be impacted, sandwich tern are likely to forage closer to the Ramsar to conserve energy. Furthermore, Ossian OWF is outside of the breeding foraging range for sandwich tern + 1SD (57.5km) and individuals from the Ramsar are not expected to travel within proximity of the wind farm for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Ythan Estuary and Meikle Loch Ramsar was not included in the HRA Stage 1 Screening reports for Cenos Floating OWF – transmission infrastructure (application reference number: 00011091) (Scottish Government, 2025b), Aspen Floating OWF – transmission infrastructure (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF – transmission infrastructure (application reference number: 00011026) (Scottish Government, 2024c). Therefore no LSE is predicted for these projects alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-10: Assessment of LSE on the Troup, Pennan and Lion's Heads SPA (30.9 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Razorbill , breeding*; and • Common guillemot breeding*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Common guillemot and razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. They're foraging ranges for common guillemot and razorbill is 95.2 km and 122.2 km respectively, and the protected site is 30.9km away, so it is assumed that they will forage closer to the SPA **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for razorbill and common guillemot. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
suspended sediments		background levels. A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 30.9 km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage RLB. Common guillemot and razorbill are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that common guillemot and razorbill have large foraging ranges of 95.2 km and 122.2 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 30.9 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Razorbill, and common guillemot are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. As this site is 30.9 km from the RLB, the SPA will not be permanently or directly affected by the presence of Proposed Development vessels. However, birds are highly mobile and may still move within the RLB. Razorbill and common guillemot are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill and 127 m for common guillemot. Given razorbill and common guillemot are highly mobile with large foraging ranges of 122.2 and 95.2 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	
In-combination		The impacts assessed for the Troup, Pennan and Lion's Heads SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 82.8 km away from the Troup, Pennan and Lion's Heads SPA and Ossian OWF is located 120.6 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 30.93 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF– transmission infrastructure is 34 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 58.5 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF – transmission infrastructure is 30.2 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, razorbill and common guillemot are likely to forage closer to the SPA to conserve energy. Furthermore, Ossian OWF is outside of the breeding foraging range for common guillemot + 1SD (95.2 km) and individuals from the SPA are not expected to travel within proximity of the wind farm for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-11: Assessment of LSE on the River Dee SAC (40.7 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic salmon; and • Freshwater pearl mussel.	The freshwater pearl mussel depends on Atlantic Salmon to support the larval stages of its life cycle. The larvae attach to the salmon's gill filaments, where they grow until detaching the following spring(NatureScot, 2020a). The conservation status of freshwater pearl mussel relies on the populations of Atlantic salmon; therefore, they will be assessed together. Atlantic salmon have a varied diet and can feed on other fish (such as herring), crustaceans, krill, cephalopods and polychaete worms (NOAA, 2023, [i]). This suggests that they would be less susceptible to changes in prey availability and distribution than specialist feeders, especially as salmon are highly mobile and can source food in alternative locations. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic salmon. Intermittent and temporary behavioural impacts may be observed in a small portion of salmon and lamprey populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. As a result, there will be no effect of freshwater pearl mussel.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		The assessment identifies that no LSE is predicted.	
EMF		Some migratory fish species are electrosensitive with specialised electroreceptive organs that are used to detect bioelectric fields of prey and predators as well as for navigation. Movements over subsea cables may result in a temporary change in swimming direction or cause avoidance behaviour due to the electromagnetic fields generated during operation. As this site is 40.7 km away from the Proposed Development it is outside the ZoI for direct impacts. However, migratory fish are highly mobile and could still travel through the ZoI. The burial and bundling of cables help to reduce the strength of EMF when compared to surface laid cables. An EMF study was undertaken for the EGL 3 and EGL 4 cable systems (**Appendix 3A: Electric and Magnetic Field Assessment**). It calculates that EMF fields on the seabed immediately above the cables will reach 122.8 µT but will attenuate to background levels within 20 m of the bundled cables (when cables are buried at 1 m depth). The submarine cables will be buried within the sediment at a minimum depth of 0.5 m and at a maximum depth of 2.25 m. **Chapter 8: Fish and Shellfish** suggests that despite migratory fish species being EMF sensitive, they would not be sensitive to the highly localised, low-level change in geomagnetic fields associated with the Proposed Development operational cables. Atlantic salmon have been shown to spend most of their time in the top 10 m of the water column, rather than on the seabed where the EMF changes would be more noticeable. Therefore, given the localised nature of the impact and the small magnitude of change, no LSE are predicted. As a result, there will be no effect of freshwater pearl mussel. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC,2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for migratory fish as there are no equivalent thresholds. Lamprey and salmon are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. There are no thresholds in (Popper *et al*., 2014) in relation to noise from high frequency sonar-based surveys (>10 kHz) (i.e. geophysical surveys). This is because the hearing range of fish species falls well below the frequency range of high frequency sonar systems. Consequently, the effects of noise from geophysical surveys on fish has not been conducted as part of this assessment. (Popper *et al*., 2014). Atlantic salmon are a group 2 species as they have a swim bladder that is not involved in hearing. Therefore, they are considered as being moderately sensitive to noise, mainly through particle motion. (Popper *et al*., 2014) categorised the risk of mortal and potential mortal injury, recoverable injury and a Temporary Threshold Shift (TTS) in hearing for group 1 and 2 species in relative terms as "high", "moderate" or "low" at three distances from the source: "near" (i.e., in the tens of metres), "intermediate" (i.e. in the hundreds of metres) or "far" (i.e., in the thousands of metres). For non-impulsive noise, risk of mortality and potential mortal injury and recoverable injury are categorised as low at all distances from the source. Risk of a TTS is considered moderate near to the source and low at intermediate and far distances. When considering behavioural responses (such as avoidance or change in swimming direction) for non-impulsive noise, the risk of behavioural effects is considered to be moderate at near and intermediate distances to the source and low when far away. Given the transient nature of activities associated with Proposed Development vessels, exposure to increased underwater noise would be temporary and transient at any one location. Any movements through the 5 km EDR would be temporary and considering the low sensitivity to noise and highly mobile nature of the species and their ability to avoid the EDR, no LSE are predicted. As a result, there will be no effect of freshwater pearl mussel. No LSE are predicted. Furthermore, the vessel density surrounding the mouth of the estuary leading to the river typically ranged between 0-3 hours / km^{2}per month in 2023 (EMODnet, 2024). There were some areas close to the mouth of the estuary as well as and further north and south of the coastline which had higher vessel densities of 100+ hours / km^2 per month. Therefore, animals are habituated to a certain degree to the presence of vessels. The presence of Proposed Development vessels will be temporary and transient, restricted to discreet activities and periods and will not increase the underwater noise from vessels other than temporarily. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		The physical presence of the Proposed Development's vessels and equipment during all phases of the Proposed Development have the potential to disturb fish species. As this site is 40.7 km from the RLB, the SAC will not be permanently or directly affected by the presence of Proposed Development vessels. However, fish are highly mobile and may still move within the RLB.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Any river Atlantic salmon movements through the RLB would be temporary. Also, the ZoI is restricted to a relatively small area and considering the highly mobile nature of the species, they will be able to avoid areas containing Proposed Development vessels without impeding migration. Furthermore, the vessel density surrounding the mouth of the estuary leading to the river typically ranged between 0-3 hours / km^2 per month in 2023 (EMODnet, 2024). There were some areas close to the mouth of the estuary as well as and further north and south of the coastline which had higher vessel densities of 100+ hours / km^2 per month. Therefore, animals are habituated to a certain degree to the presence of vessels. The presence of Proposed Development vessels will be temporary and transient, restricted to discreet activities and periods and will not increase the underwater noise from vessels other than temporarily. As a result, there will be no effect of freshwater pearl mussel. No LSE are predicted. **The assessment identifies that no LSE is predicted.**	
In-combination		The impacts assessed for the River Dee SAC for the Proposed Development alone include: changes in distribution of prey species, EMF, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 39.6 km away from the River Dee SAC and Ossian OWF is located 80.6 km away from the SAC. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 37.8 km away from the SAC (application reference number: 00009943/00011033) (Scottish Government, 2025a). Aspen Floating OWF – transmission infrastructure is 6.1 km away from the SAC (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF – transmission infrastructure is 29.9 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SAC from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals travelling to or from the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SAC, there will be no direct impacts within the SAC. Although Atlantic salmon and freshwater pearl mussel are mobile receptors and may travel within range of the projects to be impacted,given the distance from the SAC to the other projects, it is considered that other projects will not act as a barrier to animals travelling to or from the SAC. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, EMF, underwater noise changes or visual / physical disturbance or displacement. The River Dee SAC was not included in Cenos Floating OWF – transmission infrastructure HRA Stage 1 Screening report (application reference number: 00011091) (Scottish Government, 2025b) and is therefore no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-12: Assessment of LSE on the Fowlsheugh SPA (58.1 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Razorbill , (Breeding)*; and • Common Guillemot (Breeding)*.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
	*denotes a qualifying feature that is a breeding seabird assemblage feature	Common guillemot and razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. Common Guillemot and Razorbill have a foraging distance of is 95.2 km and 122.2 km respectively, and since the SPA is 58.1km away, it is assumed that they will forage within or closer to the SPA. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for common guillemot and razorbill. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 58.1 km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Common guillemot and razorbill are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton (2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that common guillemot and razorbill have large foraging ranges of 95.2 km and 122.2 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 58.1 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Razorbill, and common guillemot are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (Joint SNCB, 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. As this site is 58.1 km from the RLB, the SPA will not be permanently or directly affected by the presence of Proposed Development vessels. However, birds are highly mobile and may still move within the RLB. Razorbill and common guillemot are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill and 127 m for common guillemot. Given razorbill and common guillemot are highly mobile with large foraging ranges of 122.2 and 95.2 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Fowlsheugh SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 40.9 km away from the Fowlsheugh SPA and Ossian OWF is located 81.3 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 53.54 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF – transmission infrastructure is 61 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 5.1 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF – transmission infrastructure is 50.2 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, razorbill and common guillemot are likely to forage closer to the SPA to conserve energy. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-13: Assessment of LSE on the Outer Firth of Forth and St Andrews Bay Complex SPA (85.1km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*; and • Common guillemot breeding*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours Atlantic puffin and common guillemot feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin and common guillemot. As such, intermittent and temporary behavioural impacts may be observed in a small portion of seal and lamprey populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial (trenching) and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site. A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 85.1 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin and common guillemot are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010) reported that these species are moderately sensitive to increased water turbidity in response to dredging operations. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin and common guillemot have large foraging ranges of 250.8km and 95.2km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 85.1km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development vessels. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin and common guillemot have been identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). Razorbill have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 and Atlantic puffin has a	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		score of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the North Sea region is already used by large ships and ferries and birds are therefore habituated to a certain degree to the presence of vessels. Using (EMODnet, 2024) vessel density surrounding the SPA is very high with some areas reaching 100+ hours / km² per month in 2023. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. The presence of Proposed Development vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Atlantic puffin and common guillemot are highly mobile with large foraging ranges of 250.8km and 95.2km respectively, so they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. It is also noted that the North Sea region is already used by large ships and ferries and birds are therefore habituated to a certain degree to the presence of vessels. Using (EMODnet, 2024) vessel density surrounding the SPA is very high with some areas reaching 100+ hours / km² per month in 2023. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in vessel density associated with the Proposed Development will not be distinguishable above baseline conditions. The presence of Proposed Development vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Outer Firth of Forth and St Andrews Bay Complex SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 76.5 km away from the Outer Firth of Forth and St Andrews Bay Complex SPA and Ossian OWF is located 90.0 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 309.7 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a) and Aspen Floating OWF – transmission infrastructure is 52.3 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin and common guillemot are likely to forage closer to the SPA to conserve energy. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. the Outer Firth of Forth and	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		St Andrews Bay Complex SPA was not included in the HRA Stage 1 Screening for Cenos Floating OWF – transmission infrastructure (application reference number: 00011091) (Scottish Government, 2025b) or Muir Mhor OWF – transmission infrastructure (application reference number: 00011026) (Scottish Government, 2024c). Therefore no LSE is predicted for these projects alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-14: Assessment of LSE on the Moray Firth SAC (92.5 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Bottlenose dolphin.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Cable lay, repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss, potentially reducing prey availability. Disturbance including habitat loss of the seabed during the spawning season for important fish prey species with a demersal life stage (i.e. sandeel and herring) could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours in fish species. Bottlenose dolphin feed on a variety of prey, fish, squid, crustaceans, they can thrive in many environments (NOAA, 2025). They hunt using echolocation and cooperatively capture prey in their respective pods. They are highly mobile and capable of finding alternative feeding grounds closer to the Moray Firth SAC. They can also travel southward to Firth of Tay if prey is unavailable in the Moray Firth. **Chapter 8: Fish and Shellfish** considered the impact pathways of temporary and permanent habitat loss and underwater noise changes, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Bottlenose dolphin. These conclusions are supported by the consideration of the specific impacts on the SAC as described above, which indicate very localised changes in habitats that will not affect prey species. As such, no changes in prey species availability is predicted and survival of bottlenose dolphin and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
EMF		Cetaceans use magnetic cues, such as the earth's geomagnetic field, for navigation. An increase in EMF may temporarily affect sensitive species as they cross the cables or pass alongside their length. As the SAC overlaps with the RLB, it is within the ZoI for EMF. The burial and bundling of cables help to reduce the strength of EMF when compared to surface laid cables. An EMF study was undertaken for the EGL 3 cable systems (**Appendix 3A: Electric and Magnetic Field Assessment**). It calculates that EMF fields on the seabed immediately above the cables will reach 122.8 µT but will attenuate to background levels within 20 m of the bundled cables (when cables are buried at 1 m depth). The submarine cables will be buried within the sediment at a minimum depth of 0.5 m and at a maximum depth of 2.25 m. Gill *et al*., (2005) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Walker, 2001) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Given the rapid attenuation of the magnetic field, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field, cetaceans have a low likelihood of being affected by EMF. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		Bottlenose dolphin are high frequency cetaceans (HF) so can experience disturbance or injury from significant noise such as sub bottom profiling and piling. For the purpose of this assessment, the guidance for harbour porpoise is being used for bottlenose dolphin. The (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. The effects of noise disturbance may be	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		physical, physiological and/or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury because of a Permanent Threshold Shift (PTS) by moving away from the area. **Appendix 10A: Underwater Noise Modelling Technical Report** indicates that the maximum impact range for a PTS and a TTS for high frequency cetaceans is caused by geophysical surveys where a sub-bottom profiler (SBP) is used. A PTS in hearing could be experienced within 43 m of the source, whilst a TTS could be experienced within 165 m of the source. However, the directionality of the beam significantly reduces the potential for injury and a TTS. These distances are significantly reduced for Proposed Development vessels and equipment. Vessels and equipment will not exceed a threshold for HF Cetaceans. Disturbance was estimated to occur at a maximum range of 3.4 km (from construction support or survey vessels). Therefore, JNCC's advised 5 km EDR used in this assessment will account for the maximum range of PTS and TTS. Guidance from (JNCC., 2020) considers noise disturbance to be significant if it results in the exclusion of harbour porpoises, from more than: ▪ 20% of the relevant area of the site in any given day, or ▪ An average of 10% of the relevant area of the site over the season. This guidance is relevant for bottlenose dolphin as they are high frequency cetaceans. Since the site is 92.5 km away from the SAC, the 5km of noise disturbance will not reach the SAC to cause potential TTS or PTS and fits under the JNCC *et al.* (2010) classification. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		The physical presence of the Proposed Development vessels and equipment during all phases of the Proposed Development have the potential to disturb marine mammals. As light levels within the water column decrease rapidly with depth, cetaceans (which includes harbour porpoise) have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Guan and Brookens, 2023). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of Proposed Development vessels. The North Sea is already used by large ships and ferries, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024). Vessel density is highest near the coastline and in the southern region of the North Sea. Animals are therefore habituated to a certain degree to the presence of vessels. Furthermore, given the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals will be in the vicinity of Proposed Development vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. **The assessment identifies that no LSE is predicted.**	No LSE
Collision with Proposed Development vessels		The physical presence of the Proposed Development vessels and equipment during all phases of the Proposed Development have the potential to disturb marine mammals. As light levels within the water column decrease rapidly with depth, cetaceans (which includes harbour porpoise) have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Guan and Brookens, 2023). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of Proposed Development vessels. The North Sea is already used by large ships and ferries, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024). Vessel density is highest near the coastline and in the southern region of the North Sea. Animals are therefore habituated to a certain degree to the presence of vessels. Furthermore, given the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals will be in the vicinity of Proposed Development vessels for a sustained period. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Moray Firth SAC for the Proposed Development alone include: changes in distribution of prey species, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with the Proposed Development vessels. Therefore, these impacts have been considered in-	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 135.1 km away from the Moray Firth SAC and Ossian OWF is located 175.9 km away from the SAC. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 92.51 km away from the SAC (application reference number: 00009943/00011033) (Scottish Government, 2025a). Aspen Floating OWF – transmission infrastructure is 102.4 km away from the SAC (application reference number: SCOP-0066) (Scottish Government, 2025c). Cenos Floating OWF – transmission infrastructure is 94 km away from the SAC (application reference number: 00011091) (Scottish Government, 2025b) and Muir Mhor OWF – transmission infrastructure is 102.0 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SAC from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals travelling to or from the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SAC, there will be no direct impacts within the SAC. Although bottlenose dolphin are mobile receptors and may travel within range of the projects to be impacted, given the distance from the SAC to the other projects, it is considered that other projects will not act as a barrier to animals travelling to or from the SAC. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, EMF, underwater noise changes, visual / physical disturbance or displacement or collision with project vessels. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-15: Assessment of LSE on the Northumberland Marine SPA (107.2 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding).	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. Intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 107.2 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has been large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	
Underwater noise changes		For the purposes of the assessment, the precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise (JNCC, 2020). This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 107.2 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade et al., 2016. They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson et al., 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024), This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Developments activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Northumberland Marine SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 133.0 km away from the Northumberland Marine SPA and Ossian OWF is located 110.2 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 35.33 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. the Outer Firth of Forth and St Andrews Bay Complex SPA was not included in the HRA Stage 1 Screening for Cenos Floating OWF – transmission infrastructure (application reference number: 00011091) (Scottish Government, 2025b), Aspen Floating OWF – transmission infrastructure (application reference number: SCOP-0066) (Scottish Government, 2025c) or Muir Mhor OWF – transmission infrastructure (application reference number: 00011026) (Scottish Government, 2024c). Therefore, no LSE is predicted for these projects alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-16: Assessment of LSE on the Farne Islands SPA (117.9 km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature. •	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. The foraging range for Atlantic puffin is 127km and the considering the RLB is 117.9km from the SPA, it is assumed that they will forage closer to the site. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
deposition of suspended sediments		outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 117.9 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has been large foraging range of 250.8km km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 117.9 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.,* 2016. They have a low to moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 except for Atlantic puffin which has a score of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022, 12). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024), This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. the North Sea region has high levels of vessel activity. **The assessment identifies that no LSE is predicted.**	No LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffins are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds, 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, and no LSE are predicted. **The assessment identifies that no LSE is predicted.**	
In-combination		The impacts assessed for the Farne Islands SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 140.2 km away from the Farne Islands SPA and Ossian OWF is located 120.9 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 46.0 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a), Cenos Floating OWF – transmission infrastructure is 201 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b) and Aspen Floating OWF – transmission infrastructure is 152.3 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. the Farne Islands SPA was not included in the HRA Stage 1 Screening for Muir Mhor OWF – transmission infrastructure (application reference number: 00011026) (Scottish Government, 2024c). Therefore no LSE is predicted for this project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-17: Assessment of LSE on the Forth Islands SPA (121.4km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding); and • Razorbill, (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin and razorbill feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		The assessment identifies that no LSE is predicted.	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 121.4 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin and razorbill are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin and razorbill is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin and razorbill have a large foraging range of 250.8 km and 122.2 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 121.4 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Atlantic puffin and razorbill are identified as being sensitive to noise and visual disturbance (Wade *et al.,* 2016). Razorbill have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 and Atlantic puffin has a score of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of proposed development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022, 12). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the proposed development vessels to be affected by underwater noise. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. **The assessment identifies that no LSE is predicted.**	NO LSE
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill. Given that Atlantic puffin and razorbill are highly mobile with large foraging ranges of 250.8 km and 122.2 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, and no LSE are predicted. **The assessment identifies that no LSE is predicted.**	
In-combination		The impacts assessed for the Forth Islands SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 101.4 km away from the Forth Islands SPA and Ossian OWF is located 126.3 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 86.29 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF – transmission infrastructure is 145 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 89.2 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and Muir Mhor OWF – transmission infrastructure is 139.0 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin and razorbilll are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF, Aspen Floating OWF – transmission infrastructure and Cenos Floating OWF – transmission infrastructure are outside of the breeding foraging range for razorbill + 1SD (122.2 km) and individuals from the SPA are not expected to travel within proximity of these projects for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-18: Assessment of LSE on St Abbs Head to Fast Castle SPA (122.1km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Razorbill , (Breeding)*.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
	*denotes a qualifying feature that is a breeding seabird assemblage feature.	a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. Razorbills have a foraging distance of is 122.1km respectively, and since the SPA is 122.1km away, it is assumed that they will forage within or closer to the SPA. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for razorbill. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Once activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 122.1km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Razorbills are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that razorbill have large foraging ranges of 122.1km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 122.1km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Razorbill are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (Joint SNCB, 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. As this site is 122.1 km from the RLB, the SPA will not be permanently or directly affected by the presence of Proposed Development vessels. However, birds are highly mobile and may still move within the RLB. Razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill. Given razorbill are highly mobile with large foraging ranges of 122.1km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the St Abb's Head to Fast Castle SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 117.2 km away from the St Abb's Head to Fast Castle SPA and Ossian OWF is located 125.5 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 69.55 km away from the SPA (application reference number: 00009943/00011033) (Scottish Government, 2025a). Cenos Floating OWF – transmission infrastructure is 170 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b) and Aspen Floating OWF – transmission infrastructure is 116.4 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, razorbilll are likely to forage closer to the SPA to conserve energy. Furthermore, Ossian OWF and Cenos Floating OWF – transmission infrastructure are outside of the breeding foraging range for razorbill + 1SD (122.2 km) and individuals from the SPA are not expected to travel within proximity of these projects for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. St Abb's Head to Fast Castle SPA was not included in the HRA Stage 1 Screening for Muir Mhor OWF – transmission infrastructure (application reference number: 00011026) (Scottish Government, 2024c) and is therefore no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-19: Assessment of LSE on the East Caithness Cliffs SPA (122.2km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Razorbill , (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. Razorbills have a foraging distance of is 122.2km, and since the SPA is 122.2km away, it is assumed that they will forage within or closer to the SPA. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for razorbill. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. activity ceases, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 122.2 km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Razorbill are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that common guillemot and razorbill have large foraging ranges of122.2 km, meaning there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 122.2 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Razorbill are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (Joint SNCB, 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022).	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. As this site is 122.2 km from the RLB, the SPA will not be permanently or directly affected by the presence of Proposed Development vessels. However, birds are highly mobile and may still move within the RLB. Razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill. Given razorbill are highly mobile with large foraging ranges of 122.2km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds. It is also noted that the North Sea region has high levels of vessel activity with vessel density within the SPA typically ranging from 0-30 hours / km^2 per month in 2023 and some areas at the coast reaching 100+ (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the East Caithness Cliffs SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 173.9 km away from the East Caithness Cliffs SPA and Ossian OWF is located 211.8 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 125 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 147.4 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 116.7 km away from the SPA (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, razorbill are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF, Ossian OWF, Aspen Floating OWF – transmission infrastructure and Cenos Floating OWF – transmission infrastructure are outside of the breeding foraging range for razorbill + 1SD (122.2 km) and individuals from the SPA are not expected to travel within proximity of these projects for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The East Caithness Cliffs SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	

Table 6-20: Assessment of LSE on the Southern North Sea SAC (133.1km from RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Harbour porpoise.	Changes in prey availability is a potential indirect impact which could arise during any phase of the proposed development life cycle. Cable lay, repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss, potentially reducing prey availability. Disturbance including habitat loss of the seabed during the spawning season for important fish prey species with a demersal life stage (i.e. sandeel and herring) could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours in fish species. Harbour porpoises are considered to have higher metabolic rates than land mammals of a similar size and are therefore highly dependent on year-round proximity to reliable food sources (JNCC, 2019). The maintenance of supporting habitats and processes to ensure the provision of prey species for harbour porpoise is therefore a key consideration in maintaining the conservation objectives. Harbour porpoises are mobile and since works would be 133.1 km away, it is assumed they will go to feeding grounds closer to the SAC. No LSE are predicted. **Chapter 8: Fish and Shellfish** considered the impact pathways of temporary and permanent habitat loss and underwater noise changes, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. No impact on stock recruitment is predicted. These conclusions are supported by the consideration of the specific impacts on the SAC as described above, which indicate very localised changes in habitats that will not affect prey species. As such, no changes in prey species availability is predicted and survival of individual harbour porpoise and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
EMF		Cetaceans use magnetic cues, such as the earth's geomagnetic field, for navigation. An increase in EMF may temporarily affect sensitive species as they cross the cables or pass alongside their length. The burial and bundling of cables help to reduce the strength of EMF when compared to surface laid cables. An EMF study was undertaken for the EGL 3 cable systems (**Appendix 3A: Electric and Magnetic Field Assessment**). It calculates that EMF fields on the seabed immediately above the cables will reach 122.8 µT but will attenuate to background levels within 20 m of the bundled cables (when cables are buried at 1 m depth). The submarine cables will be buried within the sediment at a minimum depth of 0.5 m and at a maximum depth of 2.25 m. Gill *et al.,* (2005) reports that there have been no impacts to the migration of cetaceans over existing interconnector cables and (Walker, 2001) notes that harbour porpoise migration across the Basslink interconnector has been observed unhindered despite several crossings of operating sub-sea HVDC cables. Given the rapid attenuation of the magnetic field, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field, cetaceans have a low likelihood of being affected by EMF. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		Disturbance to harbour porpoise within an SAC typically (although not exclusively) arises from significant noise disturbance from activities such as piling, sonar and seismic surveys (JNCC, 2019). For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. The effects of noise disturbance may be physical, physiological and/or behavioural. Disturbance is frequently a behavioural response to noise and may lead to animals being displaced from an affected area. The onset of a TTS can be referred to as the fleeing response. This is therefore a behavioural response, and animals exposed to these noise levels are likely to actively avoid injury as a result of a permanent threshold shift (PTS) by moving away from the area.	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		Appendix 10A: Underwater Noise Modelling Technical Report indicates that the maximum impact range for a PTS and a TTS for very high frequency cetaceans is caused by geophysical surveys where a sub-bottom profiler (SBP) is used. A PTS in hearing could be experienced within 195 m of the source, whilst a TTS could be experienced within 620 m of the source. However, the directionality of the beam significantly reduces the potential for injury and a TTS. These distances are significantly reduced for Proposed Development vessels and equipment. Vessels and equipment will not cause PTS, but TTS may be caused by the TSHD or rock placement vessels within 118 m. Disturbance was estimated to occur at a maximum range of 3.4 km (from construction support or survey vessels). Therefore, JNCC's advised 5 km EDR used in this assessment will account for the maximum range of PTS and TTS. Guidance from (JNCC., 2020) considers noise disturbance to be significant if it results in the exclusion of harbour porpoises from more than: ▪ 20% of the relevant area of the site in any given day, or ▪ An average of 10% of the relevant area of the site over the season. Since the site is 133.1 km away from the SAC, the 5km of noise disturbance will not reach the SAC to cause potential TTS or PTS and fits under the JNCC *et al* (2010) classification. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		The physical presence of the Proposed Development vessels and equipment during all phases of the Proposed Development have the potential to disturb marine mammals. As light levels within the water column decrease rapidly with depth, cetaceans (which includes harbour porpoise) have evolved a sophisticated acoustic sensory system which helps them to navigate, find prey, communicate with each other and avoid potential predators (Guan and Brookens, 2023). It is therefore likely that any disturbance/displacement would first occur through underwater noise changes before the visual presence of Proposed Development vessels. The North Sea is already used by large ships and ferries, with vessel density in 2023 ranging from 0-100+ hours / km^2 per month (EMODnet, 2024). Vessel density is highest near the coastline and in the southern region of the North Sea. Animals are therefore habituated to a certain degree to the presence of vessels. Furthermore, given the transient and temporary nature of the construction and decommissioning activities, it is unlikely that individuals will be in the vicinity of Proposed Development vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. **The assessment identifies that no LSE is predicted.**	No LSE
Collision with proposed development vessels		There are known incidents of marine mammals colliding with fast moving vessels. However, it is largely recognised that the key factors contributing to collision between marine mammals and vessels are the presence of both in the same area and vessel speed (Schoeman *et al*, (2023). Injuries to marine mammals from vessel strikes are species-dependent but generally are more severe at higher impact speeds (Wang et al., 2007). Laist *et al.,* (2001) conclude that fatal collisions with marine mammals occur at vessel speeds of 14 knots or more. Vessels involved in the Proposed Development are likely to be either stationary or travelling slowly (circa 5 knots) and in predictable straight lines during construction, maintenance or decommissioning activities, thus allowing both the vessel and any animal in the area time to avoid collision. During transit times, ProposeddDevelopment vessels will be travelling at speeds greater than 5 knots. The Applicant has committed to ensuring that all vessels (exceeding 20 m) shall not exceed 14 knots during operations to protect marine mammals from ship strikes. Harbour porpoises are exposed to vessels of all sizes on a regular basis due to the density of shipping in the North Sea. Therefore, the collision risk posed by vessels associated with the Proposed Development is likely to be significantly lower than that posed by commercial shipping activity. **The assessment identifies that no LSE is predicted.**	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
In-combination		The impacts assessed for the Southern North Sea SAC for the Proposed Development alone include: changes in distribution of prey species, EMF, underwater noise changes, visual / physical disturbance or displacement and collision with the Proposed Development vessels. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 203.4 km away from the Southern North Sea SAC and Ossian OWF is located 129.8 km away from the SAC. Using information from project specific HRA Stage 1 Screening reports, EGL 2 is located 18.78 km away from the SAC (application reference number: 00009943/00011033) (Scottish Government, 2025a). Aspen Floating OWF – transmission infrastructure is 239.3 km away from the SAC (application reference number: SCOP-0066) (Scottish Government, 2025c). Cenos Floating OWF – transmission infrastructure is 194 km away from the SAC (application reference number: 00011091) (Scottish Government, 2025b) and Muir Mhor OWF – transmission infrastructure is 243.0 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SAC from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals travelling to or from the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SAC, there will be no direct impacts within the SAC. Although harbour porpoise are mobile receptors and may travel within range of the projects to be impacted, given the distance from the SAC to the other projects, it is considered that other projects will not act as a barrier to animals travelling to or from the SAC. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, EMF, underwater noise changes, visual / physical disturbance or displacement or collision with project vessels. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-21: Assessment of LSE on the North Caithness Cliffs SPA (141 km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
suspended sediments		outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 141km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has a large foraging range of 250.8km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 141km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.,* 2016). They have a low to moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of proposed development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the proposed development vessels to be affected by underwater noise. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. **The assessment identifies that no LSE is predicted.**	NO LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the North Caithness Cliffs SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 194.0 km away from the North Caithness Cliffs SPA and Ossian OWF is located 229.1 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 142 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 168.3 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 134.0 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The North Caithness Cliffs SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-22: Assessment of LSE on the Hoy SPA (165.6 km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
	*denotes a qualifying feature that is a breeding seabird assemblage feature.	direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 165.6 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has a large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 165.6km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the	NO LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Hoy SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 218.6 km away from the East Caithness Cliffs SPA and Ossian OWF is located 253.8 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 167 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 192.4 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 159.5 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF is outside of the breeding foraging range for Atlantic puffin + 1SD (250.8 km) and individuals from the SPA are not expected to travel within proximity of the wind farm for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Hoy SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-23: Assessment of LSE on the Cape Wrath SPA (215.2 km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. As the SPA is 215.2km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has a large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 215.2km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of proposed development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual	NO LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Cape Wrath SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 263.6 km away from the Cape Wrath SPA and Ossian OWF is located 303.9 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 218 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 233.2 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 291.6 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF, Ossian OWF and Muir Mhor OWF – transmission infrastructure are outside of the breeding foraging range for Atlantic puffin + 1SD (250.8 km) and individuals from the SPA are not expected to travel within proximity of these projects for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Cape Wrath SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-24: Assessment of LSE on the Fair Isle SPA (221.8 km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. The impact benchmark would not be reached. As the SPA is 221.8 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has a large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 221.8 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual	NO LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. the North Sea region has high levels of vessel activity. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Fair Isle SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 270.5 km away from the Fair Isle SPA and Ossian OWF is located 291.5 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 212 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 209.5 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 214.44 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF and Ossian OWF are outside of the breeding foraging range for Atlantic puffin + 1SD (250.8 km) and individuals from the SPA are not expected to travel within proximity of these wind farms for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Fair Isle SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

Table 6-25: Assessment of LSE on the Sule Skerry and Sule Stack SPA (230.8km from the RLB)

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
Changes in distribution of prey species	• Atlantic puffin (Breeding)*. *denotes a qualifying feature that is a breeding seabird assemblage feature.	Changes in prey availability is a potential indirect impact which could arise during any phase of the Proposed Development life cycle. Seabed preparation, cable lay, cable repair and decommissioning of the cable will cause localised, temporary loss of habitat whereas permanent cable protection may cause permanent habitat loss. This could lead to a potential reduction in prey availability. Disturbance of the seabed during the spawning season for species with a demersal life stage could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species. Other impacts which could impact prey availability include under water noise changes which could result in injury or avoidance behaviours. Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. **The assessment identifies that no LSE is predicted.**	No LSE
Temporary increase and deposition of suspended sediments		Although several Proposed Development activities will create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sand waves will cause the largest temporary sediment plume. The ZoI for this impact was set at 6.5 km as **Chapter 7: Intertidal and Subtidal Benthic** concluded sedimentation outside the RLB will be from fine particulates that will settle in 1 mm (at 6.5 km from the plume source) or less thicknesses, which is indistinguishable from background levels. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. Natural England's benchmark for the impact is "a change in one Water Framework Directive (WFD) ecological status class for one year within the site." A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases. The impact benchmark would not be reached. As the SPA is 230.8 km away from the RLB, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has a large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway. **The assessment identifies that no LSE is predicted.**	No LSE
Underwater noise changes		For the purposes of the assessment, the (JNCC, 2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This has been used as a proxy for birds as there are no equivalent thresholds. Birds are not as sensitive to underwater noise as very high frequency cetaceans (harbour porpoise) and therefore this is a highly precautionary worst-case assumption. As this site is 221.8 km from the RLB, the SPA will not be permanently or directly affected by underwater noise from the Proposed Development. However, birds are highly mobile and may still move within the EDR for foraging. Increased presence of Proposed Development vessels and equipment will generate continuous underwater noise whilst vessels are present, which may result in the temporary behavioural disturbance and displacement of birds. Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al.*, 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of Proposed Development vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual	No LSE

Potential Impact	Relevant Qualifying Feature	Assessment for LSE	Conclusion
		disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise. It is also noted that vessel density surrounding the SPA in 2023 typically ranged from 0-5 hours / km^2 per month, with density higher at the coast reaching 100+ in some areas (EMODnet, 2024). This suggests that birds within this site will already be habituated to shipping activity and associated underwater noise. Given the relatively low number of Proposed Development vessels (as detailed in **Section 2**) in comparison to the existing vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. No LSE are predicted. the North Sea region has high levels of vessel activity. **The assessment identifies that no LSE is predicted.**	
Visual / physical disturbance or displacement		Birds identified as being sensitive to the Proposed Development activities are breeding birds or those foraging within proximity to Proposed Development vessels. Birds may take evasive action, but a single disturbance event does not have an immediate effect on the survival or productivity of an individual bird. However, repeated disturbance, or disturbance over an extended period of time can affect survival and productivity. Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, no LSE are predicted. **The assessment identifies that no LSE is predicted.**	No LSE
In-combination		The impacts assessed for the Sule Skerry and Sule Stack SPA for the Proposed Development alone include: changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes and visual / physical disturbance or displacement. Therefore, these impacts have been considered in-combination. Other plans and projects that could contribute to in-combination effects were identified in **Section 6.2**. The projects progressed onto the in-combination Stage 4 assessment include the following: EGL 2, Cenos Floating OWF – transmission infrastructure, Aspen Floating OWF – transmission infrastructure, Muir Mhor OWF – transmission infrastructure, Bowdun OWF and Ossian OWF. Using GIS and shapefiles from Crown Estate Scotland, (2025) Bowdun OWF is located approximately 282.4 km away from the Sule Skerry and Sule Stack SPA and Ossian OWF is located 320.4 km away from the SPA. Using information from project specific HRA Stage 1 Screening reports, Cenos Floating OWF – transmission infrastructure is 234 km away from the SPA (application reference number: 00011091) (Scottish Government, 2025b). Aspen Floating OWF – transmission infrastructure is 257.5 km away from the SPA (application reference number: SCOP-0066) (Scottish Government, 2025c) and and Muir Mhor OWF – transmission infrastructure is 232.57 km away from the SAC (application reference number: 00011026) (Scottish Government, 2024c). Given the distance to the SPA from the Proposed Development and the insignificant effects of the Proposed Development alone, it is considered that the Proposed Development will not act as a barrier to animals foraging within the site and will not affect the distribution or population of the species at any stage of the development. Furthermore, given the distance from the other projects (as listed above) to the SPA, there will be no direct impacts within the SPA. Although birds are mobile receptors and may travel within range of the projects to be impacted, Atlantic puffin are likely to forage closer to the SPA to conserve energy. Furthermore, Bowdun OWF and Ossian OWF are outside of the breeding foraging range for Atlantic puffin + 1SD (250.8 km) and individuals from the SPA are not expected to travel within proximity of these wind farms for impacts to occur. Therefore, it is concluded that there will be no detectable contribution to an in-combination effect resulting from changes in distribution of prey species, temporary increase and deposition of suspended sediments, underwater noise changes or visual / physical disturbance or displacement. The Sule Skerry and Sule Stack SPA was not included in the HRA Stage 1 Screening for EGL 2 (application reference number: 00009943/00011033) (Scottish Government, 2025a) and is therefore, no LSE is predicted for the project alone and subsequently there will be no in-combination effect with the Proposed Development. **The assessment identifies there is no potential for an LSE in-combination.**	No LSE

7. Stage 1 Screening Statement

Having regard to the relevant legislation and the methodology followed, a Stage 1 Screening for LSE was undertaken to ascertain whether or not the Proposed Development could have a LSE on any European Site alone or in-combination with other plans or projects.

The Screening approach identified 14 UK European Sites as relevant, either because they were in the direct ZoI of the Proposed Development, or they contained mobile Annex II species, Annex I bird species or regularly occurring migratory bird species which could potentially travel into the ZoI of the Proposed Development.

A review of the project description (**Chapter 3 Project Description**) identified 14 potential impact pathways during construction, operation and decommissioning, namely:

- Temporary habitat loss / seabed disturbance;
- Permanent habitat loss;
- Changes in distribution of prey species;
- Temporary increase and deposition of suspended sediments;
- Water flow (tidal current) changes, including sediment transport considerations;
- Temperature changes – local;
- EMF;
- Introduction or spread of MINNS;
- Barriers to species movement;
- Underwater noise changes;
- Visual / physical disturbance or displacement (above water noise);
- Collision with project vessels ;
- Accidental Spills; and
- In-combination effects.

An assessment taking into consideration the conservation objectives for the European Sites and the qualifying features was undertaken for each relevant European site and is summarised in **Table 7-1**. and presented as matrices in **Appendix 2** of this document. Where Screening concluded that at this stage LSE cannot be ruled out, it is proposed that Appropriate Assessment is undertaken for the relevant European site. Considering the conclusions, the Applicant has prepared the **Appendix 5B: Habitats Regulations Appraisal Stage 2 Report to Inform Appropriate Assessment** for the following European Site:

- Buchan Ness to Collieston Coast SPA.

Table 7-1: Summary of Stage 1 Screening

European Site	Qualifying Feature	Potential Impact	LSE Conclusion
Buchan Ness to Collieston Coast SPA [UK9002491]	• Common Guillemot (breeding); and • European shag, (breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	**LSE**
		In-combination	**LSE**
Buchan Ness to Collieston Coast SAC	• Vegetated Sea cliffs.	Temporary habitat loss / seabed disturbance	NO LSE
		Permanent habitat loss	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Water flow (tidal current) changes, including sediment transport considerations	NO LSE
		In-combination	NO LSE
Ythan Estuary, Sands of Forvie and Meikle Loch SPA [UK9002221]	• Sandwich tern, *(breeding)*; • Common Tern (breeding); and • Common Eider (non-breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Loch of Strathbeg SPA [UK9002211]	• Sandwich tern, (Breeding); and • Common goldeneye, (Non-breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Loch of Strathbeg Ramsar [UK13041]	• Sandwich tern, (Breeding); and • Common goldeneye, (Non-breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Ythan Estuary and Meikle Loch Ramsar [UK13061]	• Sandwich tern, (breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE

European Site	Qualifying Feature	Potential Impact	LSE Conclusion
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Troup, Pennan and Lion's Heads SPA [UK9002471]	• Razorbill , breeding; and • Common Guillemot, breeding.	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
River Dee SAC [UK0030251]	• Atlantic salmon; and • Freshwater pearl mussel.	Changes in distribution of prey species	NO LSE
		EMF	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Fowlsheugh SPA [UK9002271]	• Razorbill, (Breeding); and • Common Guillemot, (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Outer Firth of Forth and St Andrews Bay Complex SPA [UK9020316]	• Atlantic puffin (Breeding); and • Common Guillemot, (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Moray Firth SAC [UK0019808]	• Bottlenose dolphin.	Changes in distribution of prey species	NO LSE
		EMF	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Northumberland Marine SPA [UK9020325]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE

European Site	Qualifying Feature	Potential Impact	LSE Conclusion
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Farne Islands SPA [UK9006021]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Forth Islands SPA [UK9004171]	• Atlantic puffin Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
St Abbs Head to Fast Castle SPA [UK9004271]	• Razorbill (breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
East Caithness Cliffs SPA [UK9001182]	• Razorbill (breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Southern North Sea SAC [UK0030395]	• Harbour porpoise.	Changes in distribution of prey species	NO LSE
		EMF	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
North Caithness Cliffs SPA [UK9001181]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE

European Site	Qualifying Feature	Potential Impact	LSE Conclusion
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Hoy SPA [UK9002141]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Cape Wrath SPA [UK9001231]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Fair Ilse SPA [UK9001233]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE
Sule Skerry and Sule Sack SPA [UK9001234]	• Atlantic puffin (Breeding).	Changes in distribution of prey species	NO LSE
		Temporary increase and deposition of suspended sediments	NO LSE
		Underwater noise changes	NO LSE
		Visual / physical disturbance or displacement	NO LSE
		In-combination	NO LSE

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Appendix 1. Site Descriptions

7.1.1.1. Buchan Ness to Collieston Coast SPA

The Buchan Ness to Collieston Coast SPA is a stretch of south-east facing cliff in Aberdeenshire, Scotland. The 15 km stretch of cliffs, formed of granite, quartzite and other rocks, runs south of Peterhead, broken only by the sandy beach of Cruden Bay. The varied coastal vegetation on the ledges and the cliff tops includes maritime heath, grassland and brackish flushes (JNCC, 2015). The boundary of the SPA follows the boundaries of Bullers of Buchan Coast SSSI and Collieston to Whinnyfold Coast SSSI, and the seaward extension extends approximately 2 km into the marine environment to include the seabed, water column and surface. Buchan Ness to Collieston Coast SPA qualifies under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds. It regularly supports 95,000 seabirds including nationally important populations of marine birds. These species include common guillemot, northern fulmar, European shag, herring gull and black-legged kittiwake (JNCC, 2015). The RLB overlaps with the SPA for 0.16 km^2, which is equivalent to 0.30% of the entire SPA.

7.1.1.2. Buchan Ness to Collieston SAC

The Buchan Ness to Collieston Coast SAC is a designated site that covers an area of mostly shingle, seacliff and islets, with some bogs, heath and grassland. The site qualifies under the Annex I habitats of vegetated sea cliffs of the Atlantic and Baltic coasts, with an abundance of such local species as Scots lobage (*Ligusticum scotium)* and roseroot *(Sedum rosaea).* In several places the cliff edge retains semi-natural plant communities such as maritime heath, acid peatland and brackish flushes. the cliffs and offshore stacks support a scattered but considerable colony of cliff-nesting seabirds with bird-influenced vegetation(NatureScot, 2005).

7.1.1.3. Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Ythan Estuary, Sands of Forvie and Meikle Loch SPA covers a complex area in the northeast of Scotland that contains the long, narrow estuary of the River Ythan, the Sands of Forvie on the east bank of the estuary; the eutrophic Meikle Loch and a marine component covering the area between Aberdeen and Cruden Bay to the north. This SPA has a total area of 70.62 km^2. The boundaries of the SPA follow those of Sands of Forvie and Ythan Estuary SSSI and the shore of Meikle Loch and Little Loch within Meikle Loch and Kippet Hills SSSI (JNCC, 2020). The SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of the Annex 1 species including 7% of the UK population of Sandwich and 2% of the UK population of common and [redacted] The marine component, immediately offshore of the terrestrial area forms the foraging zone for both Sandwich terns and [redacted] Other seabird species that form part of the internationally important assemblage of birds are pink-footed geese, eider, redshank and lapwing with over 26,400 individual waterfowl present overwinter (JNCC, 2020).

7.1.1.4. Loch of Strathbeg SPA

The Loch of Strathbeg SPA covers a complex area of 6.16 km^2 that is composed of a shallow freshwater loch with surrounding wetland grassland and dunes communities. The boundaries of the SPA are contained within the Loch of Strathbeg SSSI. The area provides valuable overwintering and breeding grounds for a number of important wetland bird species. The site qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of several Annex 1 species including 2% of the UK population of sandwich tern, 4% of the UK population of whooper swan and 1.6% of the UK population of Svalbard barnacle goose. The SPA further qualifies under Article 4.2 of the Birds Directive by supporting populations of European importance migratory species including pink-footed goose and greylag goose and an excess of 20,000 individual waterfowl (JNCC, 2019).

7.1.1.5. Loch of Strathbeg Ramsar

The Loch of Strathbeg Ramsar is a 6.15 km^2 site composed of a dune slack pool with surrounding wetland habitats, dune and grassland communities. The site provides overwintering and breeding habitat for a number of important wetland bird species and is also an important passage area for migratory wildfowl from Scandinavia and Iceland/Greenland. It is a shallow and naturally eutrophic loch with calcareous dunes and dune slacks in undisturbed states also in the area. The plant communities are highly diverse and support a wide range of invertebrate fauna (RIS, 2006). The site qualifies under Ramsar Criterion 1 by containing the largest dune slack pool in GB (2 km^2) and the largest water body in the north-east Scottish Lowlands. Furthermore, the site qualifies under Ramsar Criterion 2 by supporting approximately 2% of the UK population of Sandwich tern (RIS, 1995). Over winter, the site supports around 47,000 waterfowl including species like the pink-footed goose, whooper swan and barnacle goose.

7.1.1.6. Troup, Pennan and Lion's Heads SPA

The Troup, Pennan and Lion's Head SPA is a 33.65 km^2 stretch of sea cliffs along the east coast of Scotland, northwest of Peterhead (JNCC, 2019; Hornsea Project Four, 2021). Troup, Pennan and Lion's Heads qualifies as an SPA under Article 4.2 of the Birds Directive

by regularly supporting over 20,000 individual breeding seabirds. It also qualifies under Article 4.2 by regularly supporting internationally important breeding populations of the migratory species black-legged kittiwake and common guillemot. In addition to these species, the assemblage of breeding birds includes northern fulmar, herring gull and razorbill (JNCC, 2019).

7.1.1.7. River Dee SAC

The River Dee SAC is part of the 2100 km^2 River Dee catchment and is located at the coastline in Aberdeen and extending inland to the Cairngorms national park (Dee Catchment Partnership, 2024). The SAC itself covers an area of 23.34 km^2 and is largely made up of inland water bodies, with some small areas of humid / mesophile grassland and broad-leaved deciduous woodland. There are also some areas defined as tidal river, estuary, mudflats and sandflats nearer to the mouth of the river. This site is designated for the protection of freshwater pearl mussel, brook lamprey, great sea lamprey, Atlantic salmon and Eurasian otter. In particular, it is considered to be one of the best areas in the UK for freshwater pearl mussel, Atlantic salmon and Eurasian otter (JNCC, 2015).

All of the fish features are migratory species, utilising both freshwater and marine environments at different stages of their development. The River Dee is known to support all life stages of Atlantic salmon occurring in Scotland, including spawning and the salmon caught from here contribute to around 5% of the annual salmon catch in Scotland. Eurasian otter are found throughout the River Dee catchment area, with extensive areas of suitable habitat being present for feeding, resting and breeding. In particular, the combination of shallow inshore areas alongside freshwater and terrestrial areas of the SAC, make this a good habitat for coastal dwelling otters frequently found in Scotland (JNCC, 2015).

7.1.1.8. Fowlsheugh SPA

The Fowlsheugh SPA is located 4 km south of Stonehaven on the east coast of Aberdeenshire in northeast Scotland (Scottish Natural Heritage, 2009). It covers an area of 13.03 km^2 and is comprised of cliff and grassland with a majority marine component (JNCC, 2022). During the spring and summer, the 30 to 60 m high cliffs support around 115,000 breeding seabirds, which is the largest mainland seabird colony on the east coast of Scotland (Scottish Natural Heritage, 2009; RSPB, 2024). The site overlaps with two smaller SSSIs, Fowlsheugh and Crawton Bay. Fowlsheugh qualifies as an SPA under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds. The colony regularly supports 145,000 seabirds. Fowlsheugh also qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species common guillemot and black-legged kittiwake. The SPA also regularly supports nationally important populations of razorbill, northern fulmar and herring gull (Scottish Natural Heritage, 2009; JNCC, 2022). Of these populations of seabird, the Black-legged kittiwake represents 1.2% of the world population while the guillemot makes up around 1.7% of the Western European population.

7.1.1.9. Outer Firth of Forth and St Andrews Bay Complex SPA

The Outer Firth of Forth and St Andrews Bay Complex SPA is located on the south-east coast of Scotland and spans the adjacent Firths of Forth and Tay, resulting in a 2,720.68 km^2 estuarine and marine environment SPA. The mid Firth of Forth consists of sandy gravels and shell materials with a band of mud-rich sediments through the centre. Closer to the mouth of the estuary and the outer firth, it is largely sandy and gravelly muds and fine sediments. In St Andrews Bay, the majority of sediments are clean sands and gravelly muds with small areas of muddy sediments. Throughout both estuaries, the water depth is variable, but most areas are generally less than 10 m in depth. The Firth of Forth has a narrow 60 m deep channel of water in running vertically through its centre for around 3 km, but this is the deepest either Firth reaches (NatureScot, 2020b).

The complex supports a variety of prey species for the wildfowl that utilise it as a foraging ground. During the summer breeding season, this site supports over 100,000 individual seabirds which contributes to its qualification under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds during the breeding season. Of these breeding bird populations, common tern constitute 8.8% of the UK population, whilst Arctic tern, European shag, northern gannet, Atlantic puffin, black-legged kittiwake, common guillemot and herring gull make up over 1% of their respective populations within the UK (JNCC, 2020). Migratory birds also utilise this site as an overwintering area, with an assemblage of over 40,000 overwintering seabird typical for a given year. The common eider that overwinter in the complex attribute to around 35% of the UK population and the velvet scoter makes up approximately 23% of the UK population. This makes the Outer Firth of Forth and St Andrews Bay Complex an important area for seabirds and waterbirds for moulting, feeding, resting and roosting.

Additionally, the SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting non-breeding populations of European importance, namely the red-throated diver, Slavonian grebe, little gull, and feeding common and Arctic tern from adjacent colonies. It further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance through the migratory common eider and by regularly supporting in excess of 20,000 individual seabirds during the non-breeding season, including nationally important populations of black-headed gull, common gull, herring gull, common guillemot, European shag, black-legged kittiwake and razorbill (NatureScot, 2020b).

7.1.1.10. Moray Firth SAC

The Moray Firth SAC is located in the northeast of Scotland, around the Inverness area, and covers an area of 1512.74 km^2. Its main habitat features include sandbanks which are slightly covered by sea water all the time, estuaries and large shallow islets / bays. The site is designated for subtidal sandbanks and bottlenose dolphin (NatureScot, 2024b). It is one of only two known outstanding locations for bottlenose dolphin in the UK.

The bottlenose dolphin is mainly found in western waters of the UK, with resident populations existing in Cardigan Bay, Wales and the Moray Firth, Scotland and occasional sightings in the norther North Sea. It is the largest dolphin found frequently in UK waters, growing up to 4 m in length. It is managed under the Greater North Sea and Coastal East Scotland MUs. Around 200 individuals inhabit the Moray Firth, although they often travel great distances outside of the Moray Firth as part of their range, some as far south as the Firth of Forth (Moray Firth Coastal Partnership, 2021). Bottlenose dolphin are sighted throughout the year, they remain closer to shore in the summer months when calving occurs (Cardigan Bay SAC, 2024). The dolphins that use the Moray Firth SAC as part of their range are closely monitored by the University of Aberdeen and volunteers from the Whale and Dolphin Conservation at Spey Bay (University of Aberdeen, 2024; WDC, 2024).

Large scale surveys to monitor the cetacean population size have been carried in UK Waters by Small Cetacean Abundance in the European Atlantic and North Seas (SCANS IV) in 1994, 2005, 2016 and most recently in 2022 as well as by Cetaceans Offshore Distribution and Abundance in the European Atlantic (CODA) in 2007. The Moray Firth SAC lies within block CS-K of the SCANS IV survey blocks which was surveyed by air. However, this block did not have any recorded sightings of bottlenose dolphin in the most recent surveys, despite finding that the population in the East Coast Scotland MU has increased in abundance and range in recent years (Geelhoed et al., 2022; Gilles et al., 2023). Other species included in the Moray Firth SAC are grey and harbour seal, harbour porpoise and otter (JNCC, 2015).

7.1.1.11. Northumberland Marine SPA

The Northumberland Marine SPA is an entirely offshore site off the northeast coast of England near the border with southern Scotland. It covers an area of 884.98 km^2 and contains important marine geomorphological features such as subtidal sediments (including soft sediments, rocky reefs), intertidal sediments (including sandflat/mudflat), estuaries and rocky headlands. The boundary of the site significantly overlaps with the Berwickshire and North Northumberland Coast SAC to the north.

This SPA supports an internationally important assemblage of seabirds during the breeding season, with over 214,000 individuals residing within the SPA boundaries during this time (JNCC, 2017). Five Annex I species of bird breed within the SPA, including [redacted] Arctic tern, common tern, sandwich tern and over 90% of the UK population of roseate tern. Other regularly occurring migratory species are puffin and guillemot which each make up just over 1% of their respective UK populations. Additionally, during breeding season there are nationally important numbers of great cormorant, European shag, black-headed gull and black-legged kittiwake (Gov.UK, 2016; Natural England, 2016).

7.1.1.12. Farne Islands SPA

The Farne Islands SPA is a collection of islands off the Northumberland coast in the northeast of England covering an area of 1.02 km^2. It is overlapped by the larger Northumberland Marine SPA but is designated for slightly different assemblages of seabirds. The islands themselves provide important nesting habitat for seabirds, particularly terns, gulls and auks through the provision of low-lying areas of shingle and gravel, sandflats and cliffs with limited vegetation cover. The four Annex I species protected at this site are the common, Arctic, roseate and sandwich tern with each consisting of at least 1.5% of their respective UK populations. There are also common guillemot protected as a regularly occurring migrant, making up 1.72% of the biogeographic population. During the breeding season, this site also supports Arctic puffin, great cormorant, European shag and black-legged kittiwake which contribute to the internationally important assemblage of over 160,000 individual seabirds located there (Natural England, 2014; JNCC, 2018).

7.1.1.13. Forth Islands SPA

The Forth Islands SPA is a series of islands supporting the main seabird colonies in the Firth of Forth extending over a 97.97 km^2 area which consist of the islands Inchmickery, Isle of May, Fidra, The Lamb, Craigleith, Bass Rock and Long Craig. The boundary of this SPA overlaps with the Long Craig, Inchmickery, Forth Islands, Bass Rock and Isle of May SSSIs as well as the Firth of Forth SPA (NatureScot, 2018).

This SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of the Annex I species of Arctic tern, roseate tern, common tern and sandwich tern. It further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species of northern gannet, European shag, lesser black-backed gull and Atlantic puffin. Within this qualification under Article 4.2, it also applies to the site regularly supporting in excess of

20,000 individual seabirds with over 90,000 utilising the site on average annually. These seabirds include nationally important populations of herring gull (4.1% UK population), Atlantic puffin (3.1% UK population), great cormorant (2.8% UK population), common guillemot (2.2% UK population) lesser black-backed gull (1.8% UK population), black-legged kittiwake (1.7% UK population), razorbill (1.4% UK population) and smaller populations of Arctic, common, roseate and sandwich tern (JNCC, 2018; NatureScot, 2018).

7.1.1.14. St Abbs to Fast Castle SPA

St Abb's Head to Fast Castle SPA comprises an area of sea cliffs and coastal strip stretching over 10km along the Berwickshire Coast north of St Abbs. The boundary of the SPA overlaps with that of St Abb's Head to Fast Castle SSSI, and the seaward extension extends approximately 1 km into the marine environment to include the seabed, water column and surface. St Abb's Head to Fast Castle SPA qualifies under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports 79,560 seabirds including nationally important populations of the following species: razorbill; common guillemot; black-legged kittiwake; herring gull; and European shag (SNH, 2009b)

7.1.1.15. East Caithness Cliffs SPA

East Caithness Cliffs SPA is of special nature conservation and scientific importance within Britain and the European Community for supporting very large populations of breeding seabirds. It includes most of the sea-cliff areas between Wick and Helmsdale on the north-east coast of the Scottish mainland. The boundary of the SPA overlaps either partly or wholly with the following Sites of Special Scientific Interest (SSSI): Castle of Old Wick to Craig Hammel SSSI, Craig Hammel to Sgaps Geo SSSI, Dunbeath to Sgaps Geo SSSI, Berriedale Cliffs SSSI, Ousdale Burn SSSI and Helmsdale Coast SSSI. The seaward extension extends approximately 2km into the marine environment to include the seabed, water column and surface (NatureScot 2017a). East Caithness Cliffs qualifies as an SPA under Article 4.1 of the Birds Directive by regularly supporting a population of European importance of the Annex 1 species peregrine. It also qualifies as an SPA under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species common guillemot, razorbill, herring gull, black-legged kittiwake and European shag. East Caithness Cliffs also qualifies under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds including great black-backed gull, cormorant, northern fulmar, razorbill, common guillemot, black-legged kittiwake, herring gull and European shag.

7.1.1.16. Southern North Sea SAC

The Southern North Sea (SNS) SAC covers an area of 36,951 km^2 and lies along the east coast of England, predominantly in the offshore waters of the central and southern North Sea, from north of Dogger Bank to the Straits of Dover in the south. The Primary Feature of the SNS SAC is harbour porpoise, with the site supporting an estimated 17.5% of the UK North Sea MU population (JNCC, 2022). The physical characteristics of the SAC, including the sandy and coarse substrates which covers most of the site and the shallow water depths, are favoured by the species due to availability of prey.

Harbour porpoise is widespread around the UK and is the smallest and most common cetacean found within the north-western European continental shelf waters. Numerous studies have identified harbour porpoise as being the predominant species within the SAC (Sea Watch Foundation Sightings). Analyses by Gilles *et al.* (2016 and Waggitt *et al.* (2019) demonstrate the year-round densities of harbour porpoise in the SAC. Though harbour porpoise have been recorded all year round they are more common in the summer when they move closer to the shoreline to breed. Individuals also tend to move further north during the summer months so are more frequently recorded in the RLB during winter (Gillies *et al.,* 2023).

7.1.1.17. North Caithness Cliffs SPA

North Caithness Cliffs SPA is of special nature conservation and scientific importance within Britain and the European Community for supporting very large populations of breeding seabirds. The site overlaps either partly or wholly with Duncansby Head Site of Special Scientific Interest (SSSI), Stroma SSSI, Dunnet Head SSSI, Holborn Head SSSI, and Red Point Coast SSSI. The seaward extension extends approximately 2km into the marine environment to include the seabed, water column and surface.

North Caithness Cliffs SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting a population of European importance of the Annex 1 species: peregrine. North Caithness Cliffs SPA further qualifies under Article 4.2 of the Birds Directive by regularly supporting a population of European importance of the migratory species: common guillemot. North Caithness Cliffs SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds. The site regularly supports in the period 1985 to 1987 110,000 seabirds including nationally important populations of the following species: northern fulmar; black-legged kittiwake; razorbill and Atlantic puffin (NatureScot 2017b).

7.1.1.18. Hoy SPA

Hoy is a mountainous island at the south-western end of the Orkney archipelago. Hoy SPA covers the northern and western two-thirds of Hoy Island, which is formed of Old Red Sandstone and contains Orkney's highest hills, and adjacent coastal waters. The SPA supports an extremely diverse mixture of mire, heath and alpine vegetation and Britain's most northerly native woodland. These upland areas and the high sea cliffs at the coast support an important assemblage of moorland breeding birds and breeding seabirds. The boundary of Hoy SPA overlaps with that of Hoy SSSI, and the seaward extension extends approximately 2 km.

Hoy SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of the Annex 1 species: red-throated diver and peregrine. Hoy SPA further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species: great skua . Hoy SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds (SNH, 2009c). It regularly supports 120,000 seabirds including nationally important populations of the following species: Atlantic puffin, black-legged kittiwake, Arctic skua , northern fulmar, great black-backed gull and common guillemot.

7.1.1.19. Cape Wrath SPA

Cape Wrath Special Protection Area (SPA) is located in northwest Scotland and includes two stretches of sea cliffs made of Torridonian sandstone and Lewisian gneiss, around the Cape Wrath headland. These cliffs are home to large colonies of breeding seabirds. The SPA overlaps with the Cape Wrath SSSI and extends about 2 km out to sea, covering the seabed, water, and surface. The site qualifies for protection under Article 4.2 of the Birds Directive because it regularly supports over 50,000 seabirds, including nationally important populations of: black-legged kittiwake ; Common guillemot; razorbill and northern fulmar(SNH 2009d).

7.1.1.20. Fair Isle SPA

Fair Isle is an Old red sandstone island, the most southerly of the Shetland group, lying halfway between Mainland and Orkney. It has a rocky, cliff coastline with adjacent coastal waters, heather moorland, acidic grassland, maritime grassland and crofting in-bye. The boundary of Fair Isle SPA is coincident with Fair Isle SSSI. The seaward extension extends approximately 2 km into the marine environment to include the seabed, water column and surface.

Fair Isle SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of the Annex 1 species: Fair Isle wren and Arctic tern. Fair Isle SPA further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species: common guillemot (32,300 individuals, 1.4% of the north Atlantic biogeographic population) (SNH 2009e). Fair Isle SPA also qualifies under Article 4.2 of the Birds Directive by regularly supporting in excess of 20,000 individual seabirds. It regularly supports 180,000 seabirds including nationally important populations of the following species: Atlantic puffin , razorbill, black-legged kittiwake, great skua , Arctic skua, European shag (*Phalocrocorax aristotelis*), northern gannet, northern fulmar, common guillemot, and Arctic tern.

7.1.1.21. Sule Skerry and Sule Stack SPA

Sule Skerry and Sule Stack are isolated islets 60 km west of Mainland, Orkney. Sule Skerry is the larger of the two, low-lying and covered with vegetation. Sule Stack is a tall, bare rock with no plant life. The Special Protection Area (SPA) around them includes nearby sea areas (about 2 km out to sea) and overlaps with two protected sites: Sule Skerry SSSI and Sule Stack SSSI. It protects the seabed, water, and surface.

Sule Skerry and Sule Stack SPA qualifies under Article 4.1 of the Birds Directive by regularly supporting populations of European importance of the Annex 1 species: European storm petrel and Leach's storm petrel (*Oceanodroma leucorhoa*). Sule Skerry and Sule Stack SPA further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of the migratory species: Northern gannet; and Atlantic puffin. Sule Skerry and Sule Stack SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds (SNH, 2009f). The site regularly supports 100,000 seabirds including nationally important populations of the following species: common guillemot; European shag; Atlantic puffin; northern gannet; European storm petrel; and Leach's storm petrel.

Appendix 2. Screening Matrices

Matrix Key:

✓= Likely Significant Effect cannot be excluded

X = Likely Significant Effect can be excluded

N/A = Impact not relevant to feature (no source-receptor pathway)

Evidence for, or against the determination of Likely Significant Effects on European Site qualifying features is detailed within the footnotes to the Screening matrices.

C = Construction

O = Operation and maintenance

D = Decommissioning

Table 0-1: Screening Matrix for Buchan Ness to Collieston Coast SPA

Name of European Site:	Buchan Ness to Collieston Coast														
Site Code:	UK9002491														
Distance to Proposed Development	0.0 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common Guillemot	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	✓a	✓a	✓a	✓d	✓d	✓d
European Shag	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	✓a	✓a	✓a	✓d	✓d	✓d

Xa: Common guillemot and European shag feed mostly on sandeel and herring and they both have a moderate habitat specialisation score of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. However, since common guillemot have a large foraging range of 95.2 km, and European shag have a foraging range of 23.7 km, they can forage elsewhere if there is a temporary and transient reduction in prey availability. No LSE are predicted.

Xb: In comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. The presence of the Proposed Developments vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. No LSE are predicted.

Xc: Given the relatively low number of project vessels (as detailed in **Section 2**) in comparison to the already high vessel density, changes in underwater noise associated with the Proposed Development will not be distinguishable above background fluctuations. The presence of the Proposed Developments vessels will also be temporary and transient, restricted to discreet activities and periods and will not increase the shipping baseline other than temporarily. No LSE are predicted.

✓**a**: Given the protection afforded to common guillemot during the breeding period and the high sensitivity of disturbance, the assessment concluded there is a potential for LSE, and this will be assessed in the Stage 2 RIAA.

✓**d**: There is potential for an in-combination effect of visual disturbance to common guillemot and European shag. The assessment concluded there is a potential for LSE in combination between the Proposed Development, EGL 2 and Cenos Floating OWF – transmission infrastructure. , This will be assessed in the Stage 2 RIAA.

Table 0-2: Screening matrix for Buchan Ness to Collieston Coast SAC

Name of European Site:	**Buchan Ness to Collieston Coast SAC**														
Site Code:	UK9002491														
Distance to Proposed Development	1.77 km														
Impact	Temporary habitat loss / seabed disturbance			Permanent habitat loss			Temporary increase and deposition of suspended sediments			Water flow (tidal current) changes, including sediment transport considerations			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Vegetated Sea Cliffs	Xa	Xa	Xa	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd

Xa: The Proposed Development does not cross the boundary for this SAC and is beyond the ZoI for the potential impact. Therefore, there is no source-pathway- receptor at any stage of the development. No LSE predicted.

Xb: **Chapter 6: Marine Physical Processes** concludes that in the near-field (within 10m) sediment disturbance from construction resulting in high SSC. Once activities cease, sediment will rapidly drop out of suspension. Therefore, any effect from a temporary increase and deposition of suspended sediments is unlikely to be detectable against background levels. No LSE predicted.

Xc: Any changes in water flow will be highly localised and of a small magnitude, immediately around the area where cable protection is applied. As this SAC is outside of the Proposed Development, there is no source-pathway-receptor at any stage of the development on the features of the SAC. No LSE predicted.

Xd: There is no pathway between the Proposed Development and other projects and plans to interact with the SAC at any stage of the development for the impacts of temporary habitat loss / seabed disturbance, permanent habitat loss and water flow (tidal current) changes, including sediment transport considerations. Given the distance to the SAC (1.77 km from the RLB) and that any effect from the Proposed Development alone is unlikely to be noticeable against background levels, there will be no detectable in-combination effects from other plans/projects and the Proposed Development. No LSE predicted.

Table 0-3: Screening matrix for Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Name of European Site:	**Ythan Estuary, Sands of Forvie and Meikle Loch SPA**														
Site Code:	UK9002221														
Distance to Proposed Development	8 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Common tern (*Sterna Hirundo*),	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Common eider	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Common eider specialises in foraging on shellfish and crustaceans and have a high habitat specialisation score of 4 (MIG-Birds, 2022). This makes them more susceptible to changes in distribution of prey species than generalist feeder, Sandwich tern and common tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. No impact on stock recruitment is predicted. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Common tern, sandwich tern and common eider, in general are visually foraging birds, which depend on clear water to identify and catch potential prey. The foraging range of common tern, sandwich tern and common eider is 26.9 km, 57.5 km and 21.5 km respectively. Given that this SPA is 8km from the RLB, there is potential for effects. However preferred foraging grounds are likely to be closer to the SPA. No LSE predicted

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise. No LSE are predicted.

Xd: Sandwich tern, common tern and common eider are considered to have low to moderate sensitivity to visual disturbance. Seabirds (except black-headed gull and sandwich tern), seaducks, grebes and mergansers are identified as having a moderate to high sensitivity to disturbance. As covered above in underwater noise, given that the distance to the site is 8 km, they will be inclined to forage elsewhere during the works. No LSE predicted

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-4: Screening Matrix for the Loch of Strathbeg SPA

Name of European Site:	Loch of Strathbeg SPA														
Site Code:	UK9002211														
Distance to Proposed Development	13.9 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern,	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Common goldeneye, (Non-breeding) ^	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. Common goldeneye are generalist feeders. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted

Xb: Given the distance to the RLB (13.9 km) and the foraging range of sandwich tern (57.5 km), preferred foraging grounds are likely to be closer to the SPA. No LSE are predicted. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; long-tailed duck which is 30 km. Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede foraging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9km foraging grounds are likely to be closer to the SPA. Therefore, no LSE are predicted.

Xd: Sandwich tern are considered to have low to moderate sensitivity to visual disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) scored the escape distance of bird species from 1-5 (where 1 is the lowest and 5 is the highest) and scored arctic tern and sandwich tern a 1, meaning escape distances are between 0-200 m. Although no specific mean escape distance was provided for common goldeneye, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional groups. Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 13.9 km, preferred foraging grounds are likely to be closer to the SPA.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-5: Screening Matrix for Loch of Strathbeg Ramsar

Name of European Site:	Loch of Strathbeg Ramsar														
Site Code:	UK13041														
Distance to Proposed Development	13.9 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Common goldeneye, (Non-breeding) ^	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. Common goldeneye are generalist feeders. They have a moderate habitat specialisation score (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. The assessment identifies that no LSE is predicted.

Xb: A temporary increase in suspended sediments could occur on multiple occasions during construction, operation and decommissioning. However, on each occasion, the change will be for a short period (days rather than weeks), with SSCs rapidly reducing once the activity ceases.Given the distance to the RLB (13.9 km) and the foraging range of sandwich tern (57.5 km), preferred foraging grounds are likely to be closer to the Ramsar. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; long-tailed duck which is 30 km. No LSE is predicted.

Xc: Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5 km. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; long-tailed duck which is 30 km. Given that the distance to the site is 13.9km foraging grounds are likely to be closer to the Ramsar. No LSE predicted.

Xd: Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern 57.5 km. As the foraging range of the common goldeneye is unknown, it has been presumed to be the maximum for the functional group; long-tailed duck which is 30 km. Given that the distance to the site is 13.9 km, preferred foraging grounds are likely to be closer to the Ramsar. No LSE predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-6: Screening Matrix for Ythan Estuary and Meikle Loch Ramsar

Name of European Site:	**Ythan Estuary and Meikle Loch Ramsar**														
Site Code:	UK13061														
Distance to Proposed Development	15.6 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Sandwich tern,	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Sandwich tern are surface feeders of a wide variety of marine prey including fish, squid, crustaceans, jellyfish and offal. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). However, being a generalist feeder makes them less susceptible to changes in distribution of prey species. The assessment identifies no LSE is predicted.

Xb: Given the distance to the RLB (15.6 km) and the foraging range of sandwich tern (57.5km), preferred foraging grounds are likely to be closer to the SPA. No LSE are predicted

Xc: Sandwich tern are considered to have low to moderate sensitivity to noise disturbance. They have a low disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). The foraging range for sandwich tern is 57.5 km respectively. Given that the distance to the site is 23.4 km) foraging grounds are likely to be closer to the SPA. Therefore, no LSE are predicted.

Xd: Sandwich term are considered to have low to moderate sensitivity to visual disturbance. Therefore, in comparison to other species, they are less susceptible to disturbance from an increase in vessel traffic. The foraging range for sandwich tern is 57.5 km. Given that the distance to the site is 15.6 km, preferred foraging grounds are likely to be closer to the SPA. No LSE predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-7: Screening Matrix for Troup, Pennan and Lion's Heads SPA

Name of European Site:	**Ythan Estuary and Meikle Loch Ramsar**														
Site Code:	UK9002471														
Distance to Proposed Development	30.9 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Razorbill,	Xa	Xa	Xa	Xb	Xb	Xb	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf
Common Guillemot	Xa	Xa	Xa	Xb	Xb	Xb	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf

Xa: Common guillemot and razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Given that the impact of suspended sediment is restricted to a relatively small area and that common guillemot and razorbill have large foraging ranges of 95.2 km and 122.2 km respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise.

Xd: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise.

Xe: Razorbill and common guillemot are identified as being sensitive to visual disturbance (Wade *et al*., 2016). Given razorbill and common guillemot are highly mobile with large foraging ranges of 122.2 and 95.2 km respectively, they will be able to avoid project vessels without significantly reducing their foraging grounds.

Xf: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-8: Screening Matrix for River Dee SAC

Name of European Site:	River Dee														
Site Code:	UK0030251														
Distance to Proposed Development	40.7 km														
Impact	Changes in distribution of prey species			EMF			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic salmon	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Freshwater pearl mussel	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic salmon have a varied diet and can feed on other fish (such as herring), crustaceans, krill, cephalopods and polychaete worms (NOAA, 2023). This suggests that they would be less susceptible to changes in prey availability and distribution than specialist feeders, especially as salmon are highly mobile and can source food in alternative locations. As freshwater pearl mussel attach to Atlantic salmon for part of their life cycle, there will be no effect to freshwater pearl mussel if Atlantic salmon are not affected. **Chapter 8: Fish and Shellfish** determined that the Proposed Development will not have a significant adverse effect on fish and shellfish Therefore, no LSE are predicted.

Xb: Atlantic salmon have been shown to spend most of their time in the top 10 m of the water column, rather than on the seabed where the EMF changes would be more noticeable. Therefore, given the localised nature of the impact and the small magnitude of change mean that no LSE are predicted. As a result, there will be no effect of freshwater pearl mussel. No LSE are predicted.

Xc: Given the transient nature of activities associated with Proposed Development vessels, exposure to increased underwater noise would be temporary and transient at any one location. Any movements through the 5 km EDR would be temporary and considering the low sensitivity to noise and highly mobile nature of the species and their ability to avoid the EDR, no LSE are predicted. As a result, there will be no effect of freshwater pearl mussel. No LSE are predicted. No LSE are predicted.

Xd: Any river Atlantic salmon movements through the RLB would be temporary. Also, the ZoI is restricted to a relatively small area and considering the highly mobile nature of the species, the presence of the Proposed Developments vessels will be temporary and transient, restricted to discreet activities and periods and will not increase the underwater noise from vessels other than temporarily. As a result, there will be no effect of freshwater pearl mussel. No LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-9: Screening Matrix of Fowlsheugh SPA

Name of European Site:	Fowlsheugh SPA														
Site Code:	UK9002271														
Distance to Proposed Development	58.1 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Razorbill, (Breeding	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Common Guillemot	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Common guillemot and razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Given that the impact of suspended sediment is restricted to a relatively small area and that common guillemot and razorbill have large foraging ranges of 95.2 km and 122.2 km respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: Razorbill, and common guillemot are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of project vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise.

Xd: Razorbill and common guillemot are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill and 127 m for common guillemot. Given razorbill and common guillemot are highly mobile with large foraging ranges of 122.2 and 95.2 km respectively, they will be able to avoid project vessels without significantly reducing their foraging grounds.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-10: Screening Matrix for Outer Firth of Forth and St Andrews Bay Complex SPA

Name of European Site:	**Outer Firth of Forth and St Andrews Bay Complex SPA**														
Site Code:	UK9020316														
Distance to Proposed Development	85.1 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin, (breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Guillemot (breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin and common guillemot feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. As such, intermittent and temporary behavioural impacts may be observed in a small portion of seal and lamprey populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Atlantic puffin and guillemot are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010, 74) reported that these species are moderately sensitive to increased water turbidity in response to dredging operations. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin and common guillemot have large foraging ranges of 250.8 and 95.2 km respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: Common guillemot and Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade *et al*., 2016). Common guillemot have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 and Atlantic puffin has a score of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson *et al.,* 2021). However, once flushed by visual disturbance of project vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise. No LSE are predicted.

Xd: Atlantic puffin and common guillemot are identified as being sensitive to visual disturbance (Wade *et al*., 2016). Common guillemot have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 and Atlantic puffin has a score of 2 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Atlantic puffin and razorbill are highly mobile with large foraging ranges of 250.8 km and 95.2 km respectively, they will be able to avoid project vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-11: Screening Matrix for Moray Firth SAC

Name of European Site:				**Moray Firth SAC**														
Site Code:	UK0019808																	
Distance to Proposed Development	92.5 km																	
Impact	Changes in distribution of prey species			EMF			Underwater noise changes			Visual / physical disturbance or displacement			Collision with Proposed Development vessels			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Bottlenose dolphin	Xa	Xa	Xa	N/A	Xb	N/A	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf

Xa: **Chapter 8: Fish and Shellfish** determined that the Proposed Development would not have a significant adverse effect on fish and shellfish. As such, no changes in prey species availability is predicted and survival of individual harbour porpoise and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Given the rapid attenuation of the magnetic field, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field, cetaceans have a low likelihood of being affected by EMF. Therefore, no LSE is predicted.

Xc: Guidance from (JNCC, 2020) considers noise disturbance to be significant if it results in the exclusion of harbour porpoises, from more than 20% of the relevant area of the site in any given day, or an average of 10% of the relevant area of the site over the season. This guidance is relevant for bottlenose dolphin as they are also high frequency cetaceans. Since the site is 92.5 km away from the SAC, the Moray Firth SAC is outside of the 5km EDR recommended by JNCC, (2020) for geophysical surveys and the site will not be impacted by underwater noise from the Proposed Development. No LSE are predicted.

Xd: Given the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals will be in the vicinity of project vessels for a sustained period. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. Therefore, no LSE are predicted.

Xe: The collision risk posed by project vessels associated with the Proposed Development is likely to be significantly lower than that posed by commercial shipping activity. No significant LSE predicted.

Xf: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-12: Screening Matrix for Northumberland Marine SPA

Name of European Site:	Northumberland Marine SPA														
Site Code:	UK9020325														
Distance to Proposed Development	107.198														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has been large foraging range of 137 km respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade et al., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson et al., 2021). However, once flushed by visual disturbance of project vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022, 12). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise. No LSE are predicted.

Xd: Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 137 km respectively, they will be able to avoid project vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-13: Screening Matrix for Farne Islands SPA

Name of European Site:	Farne Islands SPA														
Site Code:	UK9006021														
Distance to Proposed Development	117.9 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. As such, intermittent and temporary behavioural impacts may be observed in a small portion of bird populations if animals avoid the Proposed Development during construction or decommissioning activities, but survival of the individuals and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Atlantic puffin are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin is moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that Atlantic puffin has been large foraging range of 250.8 km respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: Atlantic puffin are identified as being sensitive to noise and visual disturbance (Wade et al., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson et al., 2021). However, once flushed by visual disturbance of project vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise. No LSE are predicted.

Xd: Atlantic puffin are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid project vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-14: Screening Matrix for Forth Islands SPA

Name of European Site:	Forth Islands SPA														
Site Code:	UK9004171														
Distance to Proposed Development	121.4														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin(Breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe
Razorbill (Breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin and razorbill mostly feed on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** determined that the Proposed Development would not have a significant adverse effect on fish and shellfish, , as such, the survival of the individuals and reproduction rates of Atlantic puffin and razorbill would not be affected. No LSE are predicted.

Xb: Atlantic puffin and razorbill are water column feeders and therefore potentially impacted by turbidity when they forage for prey. Cook and Burton, (2010) reported that Atlantic puffin and razorbill are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and the SPA is outside of the 15 km ZoI, there will be no direct impacts within the SPA. However, as mobile receptors, both species could travel within range of the ZoI. However, Atlantic puffin and razorbill have large foraging range of 250.8 km and 122.2 respectively, there will be sufficient alternative foraging areas available. No LSE are predicted.

Xc: Atlantic puffin and razorbill are identified as being sensitive to noise and visual disturbance (Wade et al., 2016). Razorbill have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 and Atlantic puffin w has a score of 2 (MIG-Birds 2022). As water column feeders, they are directly influenced by underwater noise as these species are submerged for longer periods when diving in search for prey (Rogerson et al., 2021). However, once flushed by visual disturbance of project vessels, they may not rapidly resettle. SNCBs recommend a 4 km displacement buffer for visual disturbance (MIG-Birds, 2022, 12). As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of the Proposed Developments vessels. This means that they are likely to be flushed before they are within proximity of the project vessels to be affected by underwater noise. No LSE are predicted.

Xd: Atlantic puffin and razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a low to moderate disturbance susceptibility score (where 1 is the lowest and 5 is the highest) of 2 and 3, respectively (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. While unidentified, auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. The mean escape distance is 395 m for razorbill. Given that Atlantic puffin and razorbill are highly mobile with large foraging ranges of 250.8 km and 122.2 km, they will be able to avoid project vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-15: Screening Matrix for St Abbs Head to Fast Castle SPA

Name of European Site:	**St Abbs Head to Fast Castle**														
Site Code:	UK9004271														
Distance to Proposed Development	122.1 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
▪ Razorbill, (Breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. Razorbills have a foraging distance of is 122.2km respectively, and since the SPA is 122.1km away, it is assumed that they will forage within or closer to the SPA. No LSE Predicted.

Xb: As the SPA is 122.1km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Razorbills are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that razorbill have large foraging ranges of 122.2km respectively, there will be sufficient alternative foraging areas available. No LSE Predicted.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise.

Xd: Razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill. Given razorbill are highly mobile with large foraging ranges of 122.2km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-16: Screening Mmatrix for East Caithness Cliffs SPA

Name of European Site:	East Caithness Cliffs SPA														
Site Code:	UK9001182														
Distance to Proposed Development	121.4 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
▪ Razorbill, (Breeding)	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Razorbill feed mostly on sandeel and herring and they have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. Razorbills have a foraging distance of is 122.2km respectively, and since the SPA is 122.1km away, it is assumed that they will forage within or closer to the SPA. No LSE Predicted.

Xb: As the SPA is 122.1km away, there will be no direct impacts on the SPA. However, birds are highly mobile with large foraging ranges therefore, they may travel to forage within the RLB. Razorbills are water column feeders and therefore potentially impacted by turbidity when they forage for prey. (Cook and Burton, 2010) reported that the seabird species are moderately sensitive to increased water turbidity. Given that the impact of suspended sediment is restricted to a relatively small area and that razorbill have large foraging ranges of 122.2km respectively, there will be sufficient alternative foraging areas available. No LSE Predicted.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development vessels to be affected by underwater noise.

Xd: Razorbill are identified as being sensitive to visual disturbance (Wade *et al*., 2016). They have a moderate disturbance sensitivity score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). (Fliessbach *et al*., 2019) calculated the mean escape distances of various bird species from vessels. The mean escape distance is 395 m for razorbill. Given razorbill are highly mobile with large foraging ranges of 122.2km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-17: Screening Matrix for Southern North Sea SAC

Name of European Site:	Southern North Sea SAC																	
Site Code:	UK0030395																	
Distance to Proposed Development	133.1 km																	
Impact	Changes in distribution of prey species			EMF			Underwater noise changes			Visual / physical disturbance or displacement			Collision with project vessels			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Harbour porpoise	Xa	Xa	Xa	N/A	Xb	N/A	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe	Xf	Xf	Xf

Xa: These conclusions are supported by the consideration of the specific impacts on the SAC as described above, which indicate very localised changes in habitats that will not affect prey species. As such, no changes in prey species availability are predicted and survival of individual harbour porpoise and reproduction rates would not be affected. Therefore, no LSE are predicted.

Xb: Given the rapid attenuation of the magnetic field, the lack of evidence of effects on cetaceans, and the predominantly pelagic existence resulting in separation with the change in field, cetaceans have a low likelihood of being affected by EMF. Therefore, no LSE is predicted.

Xc: Guidance from (JNCC, 2020) considers noise disturbance to be significant if it results in the exclusion of harbour porpoises, from more than 20% of the relevant area of the site in any given day, or an average of 10% of the relevant area of the site over the season. Since the site is 133.1 km away from the SAC, the Southern North Sea SAC is outside of the 5km EDR recommended by JNCC, (2020) for geophysical surveys and the site will not be impacted by underwater noise from the Proposed Development. No LSE predicted.

Xd: Given the transient and temporary nature of the construction, repair and decommissioning activities, it is unlikely that individuals will be in the vicinity of Proposed Development vessels for a sustained period of time. Therefore, any visual disturbance would be temporary and not repeated over an extended period of time. Therefore, no LSE are predicted.

Xe: The collision risk posed by project vessels associated with the Proposed Development is likely to be significantly lower than that posed by commercial shipping activity. No significant LSE predicted.

Xf: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-18: Screening Matrix for North Caithness Cliffs SPA

Name of European Site:	North Caithness Cliffs SPA														
Site Code:	UK9004171														
Distance to Proposed Development	141 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin.

Xb: Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede foraging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise.

Xd: Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, and no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-19: Assessment of LSE on the Hoy SPA

Name of European Site:	Hoy SPA														
Site Code:	UK9004171														
Distance to Proposed Development	165.6 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin.

Xb: Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise.

Xd: Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, and no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-20: Assessment of LSE on the Cape Wrath SPA

Name of European Site:	Cape Wrath SPA														
Site Code:	UK9004171														
Distance to Proposed Development	215.3 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin.

Xb: Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of Proposed Development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise.

Xd: Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid Proposed Development vessels without significantly reducing their foraging grounds, and no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-21: Screening Matrix for Fair Isle SPA

Name of European Site:	**Fair Isle SPA**														
Site Code:	UK9004171														
Distance to Proposed Development	221.8 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin.

Xb: Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise.

Xd: Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid proposed development vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.

Table 0-22: Screening Matrix for Sule Skerry and Sule Stack SPA

Name of European Site:	Sule Skerry and Sule Stack SPA														
Site Code:	UK9004171														
Distance to Proposed Development	230.8 km														
Impact	Changes in distribution of prey species			Temporary increase and deposition of suspended sediments			Underwater noise changes			Visual / physical disturbance or displacement			In-combination		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Atlantic puffin	Xa	Xa	Xa	Xb	Xb	Xb	Xc	Xc	Xc	Xd	Xd	Xd	Xe	Xe	Xe

Xa: Atlantic puffin feed mostly on sandeel and herring. They have a moderate habitat specialisation score (where 1 is the lowest and 5 is the highest) of 3 (MIG-Birds 2022). Therefore, a reduction in this prey species could negatively impact these bird species. **Chapter 8: Fish and Shellfish** considered the impact pathways of habitat loss and underwater noise, concluding that the Proposed Development would not have a significant adverse effect on fish and shellfish ecology. Therefore, there will not be a significant impact on fish prey species for Atlantic puffin.

Xb: Although finer particles may form part of a sediment plume, this will dilute and disperse with distance from the source, making it unlikely to impede forging success. In addition, given the temporary and transient nature of the construction, repair and decommissioning activities, the Proposed Development will not have a significant effect on individuals from this site during any phase of development from this impact pathway.

Xc: As birds are less sensitive to underwater noise than very high frequency cetaceans, it is unlikely that underwater noise will displace them before the visual disturbance of the presence of proposed development vessels. This means that they are likely to be flushed before they are within proximity of the Proposed Development to be affected by underwater noise.

Xd: Although no specific mean escape distance was provided for Atlantic puffin, it is reasonable to assume that their escape distances would fall within the range of similar species in their respective functional group. For auks, the common guillemot exhibits the shortest mean escape distance at 127 m, while unidentified auk has the longest at 750 m, suggesting that Atlantic puffin would likely fall within this range. Given that Atlantic puffin are highly mobile with large foraging ranges of 250.8 km respectively, they will be able to avoid proposed development vessels without significantly reducing their foraging grounds, no LSE are predicted.

Xe: There is no potential for an LSE in-combination with other plans or projects. No LSE predicted.