Salamander Offshore Wind Farm

Habitats Regulations Appraisal
Stage 1: Screening

SALAMANDER

Powered by Ørsted and
Simply Blue Group

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Company Contact Information

Simply Blue Energy (Scotland) Ltd.
10 York Place
Edinburgh
EH1 3EP

Company registered in Scotland; Company Number: SC662940
Registered Address: 21 Young Street, Edinburgh, Scotland, EH2 4HU.

salamanderwind@simplyblueenergy.com
https://salamanderfloatingwind.com

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Glossary

Term	Definition
Construction Compounds	Compounds associated with the onshore works, including landfall compound, which may include elements such as hard standings, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, connection to services (including water and electricity) where possible within the intended Development Area, wheel washing facilities, workshop and office facilities and temporary fencing or other means of enclosure.
Developer	Simply Blue Energy (Scotland) Limited, a joint venture between Simply Blue Group, Ørsted and Subsea7.
Development Area	The Offshore Development Area and Onshore Development Area combined.
Development Area (Offshore)	The Offshore Development Area is the total area comprising the Offshore Array Area and the Offshore Export Cable Corridor.
Development Area (Onshore)	The Onshore Development Area is the total area comprising the landfall, Onshore Export Cable Corridor, and Onshore Substation, EBI and associated infrastructure.
Energy Balancing Infrastructure (EBI)	Energy Balancing Infrastructure which will provide services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability, as well as additional services such as system monitoring and computing. EBI will be housed within buildings and / or containers within the footprint of the Onshore Substation Area.
European Site	Sites designated under the EU Habitats and Birds Directives.
Horizontal directional drilling (HDD)	A trenchless method of cable installation where the duct (or ducts) is installed to allow the cable(s) to be installed at a later date.
Inter-array cables	Offshore cables which link the wind turbines to each other and to the Offshore Export Cable(s).
INTOG Leasing Round	The Innovation and Targeted Oil and Gas (INTOG) leasing where developers apply for the rights to build offshore wind farms specifically for the purpose of providing low carbon electricity to power oil and gas installations and help to decarbonise the sector.
Joint bay	Underground structures constructed at intervals along the Onshore Export Cable route to facilitate joining of cable sections or lengths
Landfall	The area inclusive of the landfall construction compound, landfall zone, temporary working areas and landfall funnel.
Landfall funnel	The area of the Offshore Export Cable Corridor that 'funnels' out from the export cable corridor to meet the Onshore Scoping Area.
Landfall temporary working area	Temporary compound used to undertake all construction works required to bring the offshore cables onshore and connect to the onshore cables.
Landfall zone	The intertidal zone is between Mean High-Water Springs and Mean Low Water Springs where the Offshore Export Cable makes landfall.

Link boxes	These are smaller pits, compared to joint bays, which house connections between the cable shielding, joints for fibre optic cables and other auxiliary equipment.
Marking buoys	Buoys to delineate spatial features/restrictions within the Offshore Development Area.
Monitoring buoys	Buoys to monitor in situ condition within the wind farm, for example wave and metocean conditions.
Offshore Array Area	The offshore area within which the wind turbine generators, foundations, mooring lines and anchors, and inter-array cables and associated infrastructure will be located.
Offshore Development	The entire Offshore Development, including all offshore components of the Project (WTGs, Inter-array and Offshore Export Cable(s), floating substructures, mooring lines and anchors, and all other associated offshore infrastructure) required across all Project phases from development to decommissioning, for which the Developer is seeking consent.
Offshore Export Cable(s)	The export cable(s) that will bring electricity from the Offshore Array Area to the landfall, the cable(s) will include fibre optic cable(s).
Offshore Export Cable Corridor	The area that will contain the Offshore Export Cable(s) between the boundary of the Offshore Array Area and landfall at Mean High Water Springs.
Onshore Development	The entire Onshore Development, including landfall construction compounds, temporary working areas, Onshore Export Cables, Transition Joint Bay, Joint Bays, Onshore Substation and Energy Balancing Infrastructure, construction compounds, any associated landscaping (if required) and access (and all other associated infrastructure) across all Project phases from development to decommissioning, for which the Developer is seeking consent.
Onshore Export Cables	The export cables which will bring electricity from landfall to the Onshore Substation.
Onshore Export Cable Corridor	The area within which the Onshore Export Cables will be located, as well as temporary construction compounds which includes cable trenches, haul road, excavated material and storage areas.
Onshore preparation works	Activities to be undertaken prior to formal commencement of onshore construction such as site clearance, pre-planting of landscaping works, ecological mitigation works, archaeological investigations, intrusive environmental surveys, investigations for the purpose of assessing ground conditions, remedial work in respect of any contamination or other adverse ground conditions, diversion and laying of services, erection of any temporary means of enclosure, creation of site accesses and the temporary display of site notices or advertisements.
Onshore Substation	The Project substation and all of the associated electrical equipment, with the potential to include EBI.
Safety zones	A marine area declared for the purposes of safety around a renewable energy installation or works/ construction area under the Energy Act 2004.
Salamander Offshore Wind Farm (the Project)	The entire Offshore and Onshore Developments including all offshore components and onshore components and all Project phases from development to decommissioning.
Scoping Area	The Offshore Scoping Area and Onshore Scoping Area combined.

Scoping Area (Offshore)	The Offshore Scoping Area is the area being considered within the Scoping Report encompassing the Offshore Array Area and Offshore Export Cable Corridor.
Scoping Area (Onshore)	The Onshore Scoping Area is the area being considered within the Scoping Report where the Onshore Development will be located.
ScotWind	Crown Estate Scotland offshore wind leasing programme
Scour protection	Protective materials to avoid sediment being eroded away from the base of the seabed infrastructure as a result of the flow of water.
Transition Joint Bay (TJB)	Underground structures at the landfall that house the joints between the Offshore Export Cable(s) and Onshore Export Cable(s).
Trenched methods	Trenched methods, such as open cut, involves the excavation of a trench and the installation of a cable or duct. The trench is then backfilled onshore, whereas offshore the trench may be either backfilled or left to infill naturally, though this is dependent on seabed conditions.
Trenchless methods	A trenchless method of installation where the duct (or ducts) is installed to allow the cable(s) to be installed at a later date, e.g. Horizontal Directional Drilling (HDD), pipe jacking, arc drilling or other variations with no open trench or excavation.
UK National Site Network	Previously known as the EU's Natura 2000 Network. Currently, existing Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and new SACs and SPAs designated under the Conservation (Natural Habitats &c) Regulations 1994, the Conservation of Habitats and Species Regulations 2017, and the Conservation of Offshore Marine Habitats and Species Regulations 2017 now contribute to the UK National Site Network.
Wave buoys and wind measurement devices	Equipment deployed to record specific parameters within the Offshore Development Area.

Acronyms

Term	Definition
AA	Appropriate Assessment
AEoI	Adverse Effect on Integrity
AON	All Observable Nests
AoS	Area of Search
CES	Crown Estate Scotland
CfD	Contract for Difference
EBI	Energy Balancing Infrastructure
ECC	Offshore Export Cable Corridor
EMF	Electromagnetic Forces
FWPM	Freshwater Pearl Mussels
HRA	Habitats Regulation Appraisal
HVAC	High Voltage Alternating Current
INNS	Invasive Non-Native Species
INTOG	Innovation and Targeted Oil and Gas
JNCC	Joint Nature Conservation Committee
JV	Joint Venture
kV	Kilovolts
LSE	Likely Significant Effect
MHWS	Mean High Water Springs
MS-LOT	Marine Scotland – Licensing Operations Team
MSS	Marine Scotland Science
MW	Megawatts
ODA	Offshore Development Area
OnSS	Onshore Substation
OWF	Offshore Wind Farm
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds Scotland
SBES	Simply Blue Energy Scotland
SMP	Seabird Monitoring Programme

SNCB	Statutory Nature Conservation Bodies
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TJB	Transition Joint Bays
WTG	Wind Turbine Generator

1 Introduction

1.1 Project Description

The Salamander Offshore Wind Farm ('the Project') is being developed by Simply Blue Energy (Scotland) Ltd and is a joint venture between Simply Blue Group, Ørsted and Subsea7. The Project is being progressed through the Innovation and Targeted Oil and Gas (INTOG) leasing round, under the innovation part. The Project is intended to be a precursor and stepping-stone to ScotWind developments, allowing the Scottish supply chain to gear-up and de-risk in preparation for these commercial-scale opportunities.

The offshore element of the Project will have an installed capacity of up to 100 MW and comprises of wind turbines generators (WTGs) and all the infrastructure required to transmit the power generated by the turbines to the onshore substation (OnSS). The Project will also comprise of other infrastructure required to operate and maintain the wind farm, such as, wave buoys and wind measurement devices. The Project will use High Voltage Alternating Current (HVAC) technology to bring the power to shore and onshore will also include Energy Balancing Infrastructure (EBI) with battery storage, within the footprint of the OnSS.

The main offshore components will include:

- Up to seven offshore WTGs;
- Floating substructures to support the WTGs;
- Mooring and anchoring systems to connect the floating substructures to the seabed;
- Inter-array cables (including both dynamic and static parts) to collect the power from the WTGs;
- Connection hub(s)/joint(s) on the seabed, including any associated foundations; and
- Export cable(s) as a continuation of the inter-array cables to bring the power ashore.

At landfall, the offshore export cable(s) will be joined to onshore export cables at the transition joint bays (TJBs) which will be located above mean high water springs (MHWS). The main onshore components will include:

- Cable TJB(s) to join the offshore and onshore cables;
- Onshore export cables buried in up to 2 trenches;
- An OnSS compound, EBI and associated infrastructure;
- Grid connection works; and
- Access roads to the OnSS.

The Project will include EBI within the confines of the OnSS to provide services to the whole energy system, which may include importing, storing and exporting energy to meet grid needs, improving grid stability and reliability, or providing additional services such as system monitoring and computing.

A seabed lease is being sought under the innovation track of the INTOG leasing programme administered by Crown Estate Scotland (CES). The Project's operational life will be 35 years.

Further details of the Project are provided within the Scoping Report (Document: 08140473), which accompanies this Screening Report for submission to Marine Scotland Licensing Operations Team (MS-LOT) and Aberdeenshire Council. A summary of the Design Envelope is provided below in Table 1.1.1.

Table 1.1 Indicative Design Envelope for the Project

Description	Design Parameter
Maximum Project capacity	Project capacity: up to 100 MW. Maximum number of turbines: 7.
Offshore Array Area	Approximately 35 km east of Peterhead, with water depths around 86 m to more than 111 m below chart datum (CD). Total area ≤33.25 km^2. Cables within the Array Area will include dynamic cables (for all or part of the connections between turbines which link to the export cable corridor), which will be jointed together or connected to a subsea electrical hub(s) to reduce the cables to shore.
Offshore Export Cable Corridor	The Offshore Export Cable Corridor will link the Offshore Array Area with landfall. Offshore cables will include up to two export cables to shore. Cables will be routed to avoid sensitive features wherever practicable and buried as the primary cable protection method. Additional cable protection may be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a cable burial risk assessment (CBRA), completed to determine the suitable cable protection measures, and implemented through relevant project plans. Possible installation techniques include ploughing, trenching, jetting, rock-cutting, dredging. Pre and post installation works may also be required. Voltage of subsea cable: ≤ 132 kV. Total length of inter-array cables: ≤ 20 km. Total length of offshore export cables: ≤ 100 km.
Landfall	The offshore export cables will make landfall north of Peterhead. Landfall methods: trenched (e.g. open cut) or trenchless (e.g. horizontal directional drilling, pipe jacking, arc drilling, or similar). Number of transition joint bays (TJB): ≤ 2. TJB footprint: ≤ 10 x 25 m. TJB depth: ≤ 6 m. Landfall construction compound: ≤ 42,000 m^2.
Onshore Export Cable Corridor	Extends from the landfall TJB to the onshore substation and to include a 50 m temporary construction corridor and a cable corridor of installed works of up to 30 m. Onshore cables will be buried. Number of cable circuits: ≤ 2. Number of onshore cables: 3 per circuit. Cable installation corridor: ≤ 50 m. Number of trenches: ≤ 2. Trench width at surface: ≤ 5 m.
Onshore substation (OnSS) and the Energy Balancing Infrastructure (EBI)	Close to landfall and including the electrical plant to meet National Electricity Grid requirements. To be housed in a single or multiple building(s), several containers, in an open yard or a combination of the above. The connection onwards from the OnSS to the UK transmission network will be brought forward separately by the network operator. OnSS footprint: ≤ 30,000 m^2. Construction compound: ≤ 15,000 m^2. Number of main buildings: ≤ 8. Building height: ≤ 20 m. Number of containers: ≤ 4.

Description	Design Parameter
	Switchyard height: ≤ 25 m.
Turbine and floating substructure type	Floating substructures will be assembled at quayside. WTGs will be installed on to substructures either on site via a heavy-lift vessel or by a quayside crane in port and transported to site. Floating substructure options for the water depths include: tension-leg platform (TLP) and semi-submersible/ barge. Structural materials include: steel and/or concrete. Floating substructure dimensions (length x breadth x height): ≤ 140 x 140 m x 90 m, with an operational draught of ≤ 60 m and height above sea level of ≤ 30 m.
Wind turbine parameters	Blade clearance: ≥ 22 m. Hub height: ≤ 180 m. Rotor diameter: ≤ 265 m. Tip height: ≤ 325 m. Total rotor swept area: ≤386,082 m^2. Spacing between WTGs: ≥1,000 m.
Mooring and anchoring	Number of mooring lines per substructure: ≤ 9. Type of mooring: tension, taut, catenary or semi-taut moorings. Mooring line radius: ≤ 1,500 m. Type of anchor: drag-embedment, gravity, vertical load, drilled micro-piles, piled, suction or gravity. Number of anchors: ≤ 9 per substructure. Individual Pile Diameter ≤ 2.5 m. Pile Penetration: ≤ 30 m. Anchor seabed footprint: ≤ 150 m^2 per anchor.
Subsea manifolds and Array Joints	If required will be within the Offshore Array Area, to reduce the number of cables that run to shore. Up to 2 subsea hubs: Seabed footprint: ≤ 15 x 15 m. Height above seabed: ≤ 10 m. Number of piles: ≤ 12. Individual Pile Diameter: ≤ 1.5 m Pile Penetration: ≤ 30 m Up to 7 Array Joints: Seabed footprint: ≤ 4 x 2 m. Height above seabed: ≤ 3 m. Number of piles: 0.

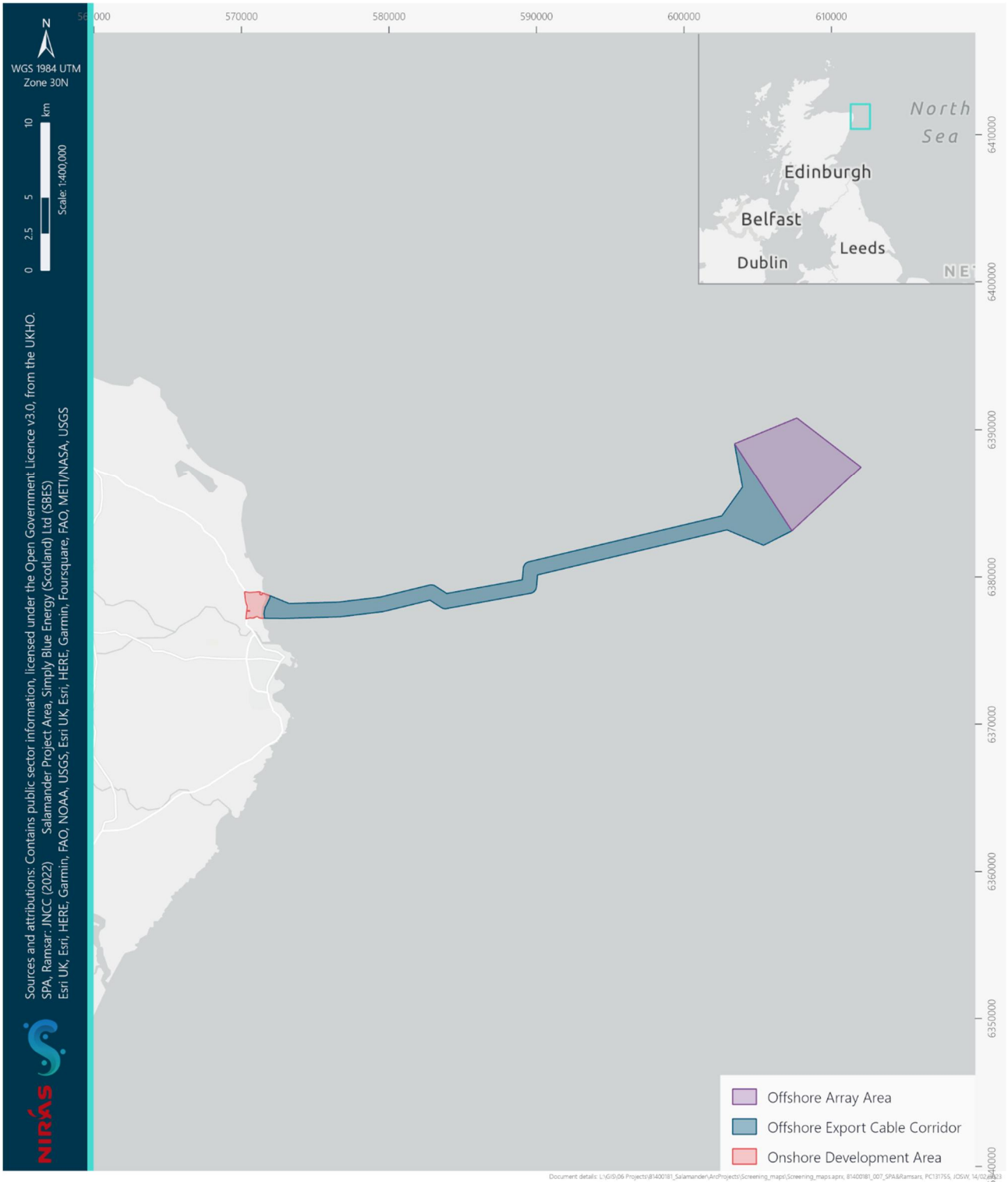


Figure 1.1 Location of Salamander Offshore Wind Farm for Screening

1.2 Purpose of this Report

The purpose of this document is to present the approach to and conclusions from Habitats Regulations Appraisal (HRA) Screening for the Project. Screening is often referred to as HRA Stage 1, and in Figure 2.1 is included as step 3. The HRA Screening will support the consenting process as required under:

- Conservation (Natural Habitats &c.) Regulations 1994 (which transposes the obligations in the EU Habitats Directive into Scots law);
- Conservation of Habitats and Species Regulations 2017 (which transposes the obligations in the EU Habitats Directive into English and Welsh law and, in limited circumstances, Scots law); and
- Conservation of Offshore Marine Habitats and Species Regulations 2017 (which transposes the obligations in the EU Habitats Directive into Scots law and English and Welsh law, and applies to proposes more than 12 nautical miles from land).

It should be noted that the Habitats Regulations remain in force. NatureScot state the following with respect to this: '*The Habitats Regulations have been amended in Scotland, most recently in 2019 as a result of the UK leaving the EU. These amendments mean that we must continue to apply the requirements of the Habitats and Birds Directives to how European sites are designated and protected.*'[1]

The report provides the necessary information required to undertake HRA Screening of the offshore and onshore elements of the Project, to determine the potential for a Likely Significant Effect (LSE) during the construction, operation and maintenance and decommissioning of the Project. The determination is made with respect to European Sites (the UK Site Network) and includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Ramsar sites are included as a matter of government policy. The steps that make up the HRA process are described in Section 2.

[1] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/legal-framework/habitats-directive-and-habitats-regulations#:~:text=The%20Habitats%20Regulations%20have%20been,sites%20are%20designated%20and%20protected and https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/

2 The HRA Process

2.1 Legislative Context

2.1.1 Habitats Directive and Habitats Regulations

The Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') protects habitats and species of European conservation importance. The Habitats Directive combines with the Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive'), which protects rare, vulnerable and migratory bird species, to create the 'Natura 2000' network of European protected sites. European sites designated under the Habitats Directive are called SACs, and those designated under the Birds Directive are SPAs.

In Scotland these directives are implemented through the Conservation (Natural Habitats &c.) Regulations 1994 (the 'Habitats Regulations') and, in relation to section 36 consents, the Conservation of Habitats and Species Regulations 2017 (the 'S36 Habitats Regulations'), which cover terrestrial areas and territorial waters out to 12 nautical miles. Waters beyond 12 nautical miles, up to the extent of the British Fishery Limits and UK Continental Shelf Designated Area, are covered by the Conservation of Offshore Marine Habitats and Species Regulations 2017 (the 'Offshore Habitats Regulations').

Additionally, the Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (the 'Ramsar Convention') designates wetland sites for protection ('Ramsar sites'). The Scottish Government reiterated its policy on the protection of Ramsar sites in 2019[2], specifically stating that 'where Ramsar interests coincide with Natura qualifying interests protected under an SPA or an SAC, as the case may be, the interests are thereby given the same level of (legal) protection as Natura sites' and 'where Ramsar interests are not the same as Natura qualifying interests but instead match Site of Special Scientific Interest (SSSI) features, these receive protection under the SSSI regime'.

The Habitats Regulations, S36 Habitats Regulations, and the Offshore Habitats Regulations remain in force, with the same protections retained, but UK sites are no longer part of the EU's Natura 2000 network, instead forming a national network of protected sites. Key terminology is primarily unchanged, with the terms 'European site', 'European marine site', 'European offshore marine site', 'Special Area of Conservation (SAC)' and 'Special Protection Area (SPA)' all being retained[3].

In cases where no adverse effect on integrity (AEOI) can be discounted, the competent authority (i.e. Scottish Ministers, for projects of this type) would previously have been required to seek the opinion of the

[2] https://www.gov.scot/publications/implementation-of-scottish-government-policy-on-protecting-ramsar-sites/
[3] https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/documents/

European Commission on whether the plan or project must be carried out for imperative reasons of overriding public interest. Since exiting the EU, this now falls under the remit of the Scottish Ministers, who must seek the opinion of the Secretary of State, the Joint Nature Conservation Committee (JNCC), and any other person the Scottish Ministers consider appropriate.

2.2 The Staged Process for HRA

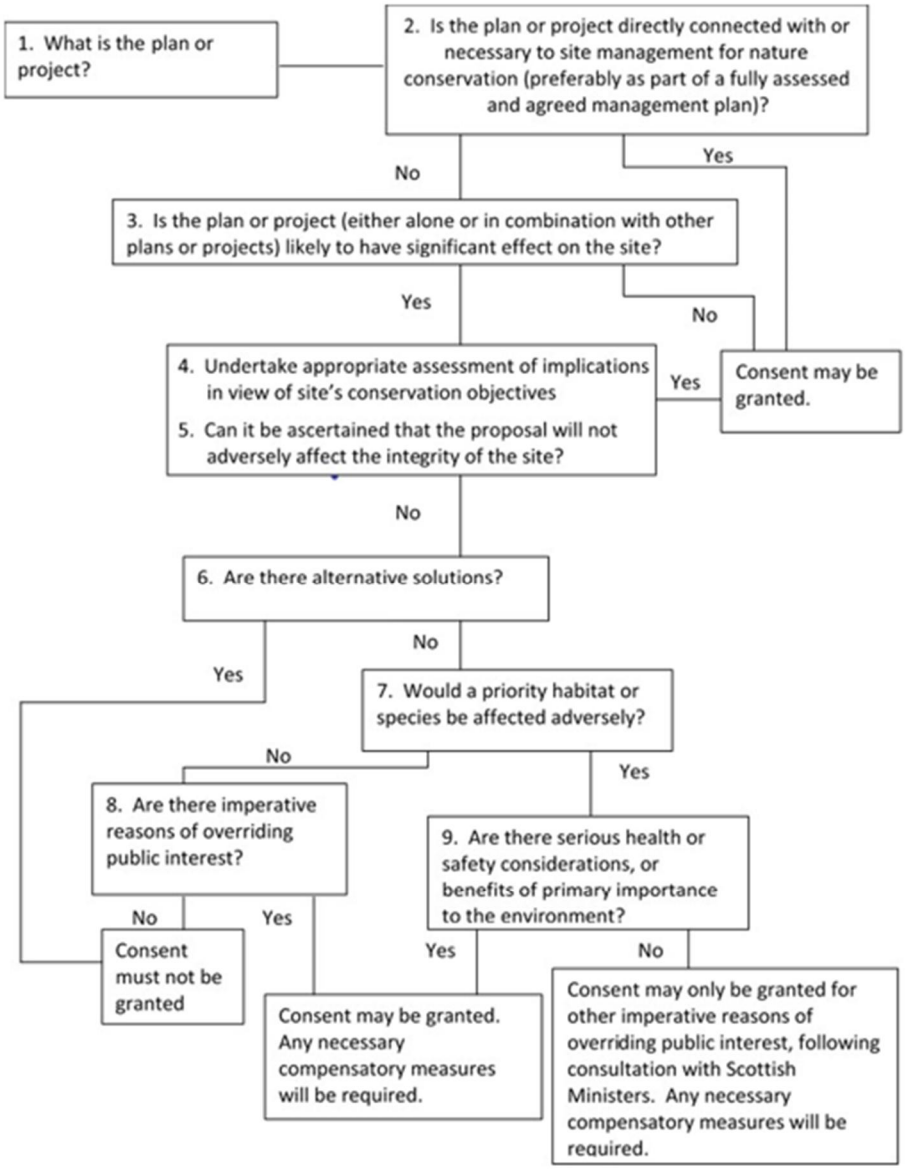
Figure 2.1 summarises the steps to take when determining if a plan or project could affect a European Site. For the Project, the answer to step 1 is an offshore wind farm project being progressed through the INTOG leasing round. With respect to step 2, as the Project is not directly connected with or necessary to site management for nature conservation, the Project is expected to progress to step 3. At this point, the HRA process is typically viewed as occurring across a number of stages, with these summarised as follows:

- Stage One – Screening (included in Figure 2.1 as step 3): determination of potential for LSE of the proposal on European sites, either alone or in combination with other projects or plans. Mitigation measures cannot be considered at this stage.
- Stage Two - Appropriate Assessment (AA) (included in Figure 2.1 as steps 4 and 5): a Report to Inform Appropriate Assessment (RIAA) is prepared, to provide the Competent Authority with the necessary information to determine whether the plan or project will have an AEOI of any European Site. Consideration is here given to any planned mitigation measures within the proposal.
- Stage Three - Examination of Alternative Solutions (included in Figure 2.1 as step 6): if the AA cannot rule out potential AEOI, then alternative options for the plan or project must be considered.
- Stage Four - Assessment of IROPI (Imperative Reasons of Overriding Public Interest) (included in Figure 2.1 as step 8 or (for priority habitats and species) step 9): where no alternative solutions are determined to be possible, assessment will be undertaken to determine whether there is an imperative reason of overriding public interest for the proposal to be consented.

The need for and content of each stage subsequent to screening will be informed by the previous, with progression post Stage 1 informed by each subsequent stage. Together, the stages identified above are referred to as Habitats Regulations Appraisal (HRA).

This report provides the information required to inform Stage 1 Screening.

Figure 2.1 How to consider plans and projects that could affect European sites (SPAs and SACs) (from NatureScot[4])



[4] https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra

2.3 Relevant Guidance

Screening, and subsequent preparation of the RIAA, which includes step 4 and 5 in Figure 2.1, will be undertaken with reference to key HRA guidance documents, including:

- Scottish Government 'Habitats Regulations Appraisal (HRA)'[5];
- NatureScot 'Habitats Regulations Appraisal'[6]; and
- UK Government including recent guidance 'Guidance on the use of the Habitats Regulations Assessment'[7].

Noting that the above also include links to relevant European guidance.

[5] https://www.gov.scot/policies/environmental-assessment/habitats-regulations-appraisal-hra/
[6] https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra
[7] https://www.gov.uk/guidance/appropriate-assessment

3 Consultation

Consultation on Scoping and HRA Screening was held in a series of on-line workshops and facilitated by the provision of Scoping Briefing Packs two weeks in advance. Specific to HRA Screening, there were four key Workshops as identified in Table 3.1, with HRA Screening information included in the four associated Scoping Briefing Packs. The aim of the Scoping Briefing Packs was to provide information on the technical topic for discussion. In particular information was provided on the baseline environment, to summarise key data sources, any site specific surveys completed/planned and to highlight where information on designated sites will be drawn from. The approach to screening per receptor group was presented to enable comment on the pressures identified and the parameters to apply, and for HRA Screening, if additional technical reporting (above and beyond that required for the Environmental Impact Assessment Report (EIAR)) would be expected. A high level approach to screening in-combination was also provided.

The four topics with direct relevance to HRA Screening are summarised in Table 3.1 below, including the comments made with regards screening and how these are included in the current report. A summary of the Workshops as relevant to Scoping is provided in the Scoping Report (Document: 08140473).

Table 3.1 Summary of Screening Consultation

Workshop Title	Workshop Date	Stakeholders Present (unless noted)	Key Comments	Status
Benthic ecology and Fish and shellfish ecology	28.11.2022	MS-LOT Marine Scotland Science NatureScot	On benthic ecology, no comment was received (all agreed) including the expectation that all Annex I habitat features of SACs would likely be screened out	Benthic ecology screening conclusions presented in Section 6.2.
			A number of additional references to be added for migratory fish in the RIAA (for use in assessment).	Will be included in the RIAA (where published).
			Agreed that a 600 km buffer was appropriate for migratory fish.	Included in Table 5.4.
			Agreed that the pressures included for migratory fish and freshwater pearl mussels (FWPM) were correct with a few additions.	Additions included in Table 5.4 as noted here.
			Agreed to include operational noise.	Included in Table 5.4.
			Barrier effects to be included including fish aggregation (prey or predators).	Inclusion made clear in Table 5.4.
			Agreed on the expected approach to assessment of migratory fish outside site boundaries.	Agreed approach will be used in the RIAA

Workshop Title	Workshop Date	Stakeholders Present (unless noted)	Key Comments	Status
Marine ornithology	29.11.2022	MS-LOT Marine Scotland Science NatureScot RSPB Scotland (invited but could not attend)	All agreed on the data sources to inform baseline, the receptors and pressures to consider for screening.	Approach as defined in Section 5.4.
			Agreed to apply the NatureScot foraging range tool for breeding birds (excluding the Fair Isle data for colonies away from Orkney/Shetland).	As applied in Section 5.4.
			Two tier approach to screening agreed – important not to rule out too early without clear justification and so audit trail required if ruled out. Sites ruled out to be agreed in consultation.	As applied in Section 5.4.
Marine mammals	29.11.2022	MS-LOT Marine Scotland Science NatureScot	The planned approach to screening (pressures and parameters) were agreed.	Subject to additions noted here.
			Underwater noise in operation to be included for screening.	Included in Table 5.2.
			Electromagnetic Field (EMF) to be considered as a pressure in relation to indirect impacts via effects on marine mammal prey species, but not directly for marine mammals.	Included in Table 5.2.
			Bottlenose dolphin density to be estimated based on half the population spread evenly within the 20 m depth contour.	To be applied in the RIAA.
			200 km to be applied for screening seals. Noting that for connectivity in assessments, a distance of 50 km (harbour seal) and 20 km (grey seal) can be applied.	200 km applied for screening in Section 5.3, RIAA to consider connectivity across 50 km (harbour seal) and 20 km (grey seal).
Onshore ornithology, ecology, geology and hydrology	30.11.2022	MS-LOT NatureScot Aberdeenshire Council SEPA RSPB Scotland (invited but could not attend)	No comment received on the approach to screening or the expectation that all onshore SACs would be screened out (all agreed).	As presented in Section 5.6 and 6.6, and Table 6.6.
			The potential for supporting habitat for wintering geese (SPA) was noted.	As presented in Section 5.6 and 6.6, and Table 6.6.

4 Environmental Baseline

The following summarises the main sources of information that will be drawn on for the HRA process. This includes existing data sources that are in the public domain and completed, ongoing and planned site specific surveys. Further information is available in the Scoping Report (Document: 08140473) that is being submitted at the same time as this HRA Screening Report.

4.1 Benthic Subtidal and Intertidal Ecology

4.1.1 Existing Data Sources

Key existing data sources include those associated with relevant designated sites. That information is available through NatureScot[8] and will be drawn on as required for the subsequent assessment should an Annex I habitat feature(s) be screened in. The GIS files for screening, which contain all relevant site boundaries and detail the associated designated features, have been sourced as described in Appendix A.

The closest SAC with Annex I features to the Project is Buchan Ness to Collieston SAC, located approximately 7 km at its nearest point from the Offshore Development Area. The following Annex I habitat is a primary reason for selection of this site:

- Vegetated sea cliffs of the Atlantic and Baltic coasts.

Further to the south is the Sands of Forvie SAC (more than 15 km distant at its nearest point), with the following Annex I habitats being a primary reason for selection of this site:

- Embryonic shifting dunes;
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes);
- Decalcified fixed dunes with *Empetrum nigrum*; and
- Humid dune slacks.

The broadscale benthic ecology characteristics are described in the Scoping Report (Document: 08140473), with benthic habitat types identified as the EUNIS habitats 'Deep circalittoral coarse sediment' (A5.15), 'Deep circalittoral sand' (A5.27) and 'Circalittoral fine sand' (A5.25) and 'Circalittoral muddy sand' (A5.26). The potential presence of rocky reef, *Sabellaria spinulosa* reef and pockmarks in the area is noted, albeit outside the boundary of any SAC and therefore not relevant to the HRA process. The Southern Trench Nature Conservation Marine Protected Area (NCMPA) lies to the west of the Offshore Array Area, with the Offshore Export Cable Corridor running directly through its southern corner. The site is designated for

[8] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-areas-conservation-sacs

(among other features) burrowed muds and shelf deeps. The Southern Trench NCMPA is included within the Scoping Report (Document: 08140473) as agreed in the Scoping Workshop on 28.11.2022.

4.1.2 Site Specific Surveys

Marine data currently available and planned surveys work at the Project is summarised in the Scoping Report (Document: 08140473) and the Benthic Ecology Baseline Data Review (Xodus, 2023). Benthic subtidal and intertidal surveys will be undertaken to collect site-specific data to allow for characterisation of the benthic subtidal and intertidal ecology study area. Data gathered during the initial site investigations (geophysical and benthic surveys) will supply a detailed description of the benthic environment and biotope classification within the Offshore Development Area and will identify the presence or absence of benthic habitats or species of conservation importance.

4.2 Marine Mammals

4.2.1 Existing Data Sources

Key existing data sources include those associated with relevant designated sites. That information is primarily available through NatureScot[9], and JNCC where relevant. These will be drawn on as required for the subsequent assessment with respect to Annex II marine mammal features screened in. The GIS files for screening, which contain all relevant site boundaries and the associated designated features, have been sourced as identified in Appendix A. A number of SACs for harbour and grey seal are located around Scotland, with a single SAC for bottlenose dolphin (Moray Firth SAC, approximately 120 km west of the offshore array area) and a single SAC for harbour porpoise (Inner Hebrides and the Minches SAC, located to the west coast of Scotland).

A number of existing data sources are available for marine mammals, with these including (but not limited to):

- SCANS III survey data;
- JCP Phase III data;
- The reports issued by Special Committee on Seals (SCOS);
- Seal telemetry data (in particular Carter *et al* 2020 and Carter *et al* 2022); and
- Reporting from Moray Firth projects.

The Scoping Report (Document: 08140473) submitted provides a summary of the marine mammal baseline in the vicinity of the Offshore Development Area. That information is drawn on here, with the marine

[9] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-areas-conservation-sacs

mammal density values for the four Annex II marine mammal species identified in the Scoping Report (Document: 08140473) provided in Table 4.1.

Table 4.1 Marine Mammal Densities in the Vicinity of the Offshore Development Area

Species	Animals/ km^2	Animals/ 25 km^2
Bottlenose dolphin (*Tursiops truncatus*)	0.0298*	-
Harbour porpoise (*Phocoena phocoena*)	0.402-0.599*	-
Grey seal (*Halichoerus grypus*)	-	1-3**
Harbour seal (*Phoca vitulina*)	-	0-1**

* based on Hammond *et al*., 2021; ** based on Carter *et al.* 2022

With respect to harbour and grey seals, the Offshore Development Area lies in an area of relatively low seal usage, with the Firths of Forth and Tay to the south (especially for grey seal), Dornoch Firth and Morrich More (especially for harbour seal), Orkney (for both grey and harbour seal) and Shetland (especially for harbour seal) to the north hold relatively greater proportions of the UK seal populations (Carter *et al*, 2020 and 2022). A number of SACs are designated for harbour and grey seals across these areas. The most recent Special Committee on Seals (SCOS) report (2021) estimated the grey seal pup production in Scotland in 2019 as 54,050 (UK 67,850), with the 2020 population estimated at 120,800 (UK 157,300). Population growth was mainly limited to the North Sea colonies, which increased by 23% between 2016 and 2019. In 2020, no large scale surveys of Scottish harbour seals were undertaken, but it is noted in SCOS (2021) that the populations on the east coast of Scotland and the Northern Isles have generally declined since the early 2000s; in all areas the current population size is at least 40% below the pre-2002 level. Harbour seal populations on the north coast, Orkney and the Tay and Eden are continuing to decline. There is no evidence of continued decline in Shetland or the Moray Firth, but no indication of recovery.

The Offshore Export Cable Corridor landfall and part of the Offshore Export Cable Corridor fall within the Coastal East Scotland (CES) bottlenose dolphin Management Unit (MU), with the remainder of the Offshore Export Cable Corridor and the Offshore Array Area within the Greater North Sea (GNS) bottlenose dolphin MU (IAMMWG, 2022). The Offshore Array Area is located approximately 9.7 km outside the CESMU. Of these, the CESMU relates to the inshore population of bottlenose dolphin off the east coast of Scotland, with an abundance of 224 (95% confidence interval 214-234). The GNSMU extends across a substantial area, with the abundance of animals within the UK portion being 1,885 (95% confidence intervals of 476-7,461) and overall GNSMU abundance of 2,022 (95% confidence interval 548-7,453). As discussed in the Scoping Workshops (see Table 3.1) water depth is an important consideration to the population distribution of bottlenose dolphin, with the 20 m contour particularly relevant. It is of note that the Offshore Array Area is in much deeper water (typically being > 80 m deep); this will be an important consideration in terms of understanding species distribution and density for the assessment.

There are three SACs with bottlenose dolphin as a qualifying feature in the UK; two are in Welsh waters and the third is the Moray Firth SAC, located approximately 120 km to the west of the Offshore Development

Area. The Moray Firth population (with a baseline population of 101-250 individuals) is known to regularly travel down the east coast of Scotland and individuals have been reported in waters off Ireland and the Netherlands (NatureScot, 2021).

Harbour porpoise are a widespread species. Density levels along the east coast of Scotland are relatively low compared to the central and southern North Sea but are understood to increase through the summer and into autumn (Waggitt *et al*, 2019). The Offshore Development Area is not located within an area identified as a persistent area of relatively high harbour porpoise density (Heinanen and Skov, 2015). The closest SACs with harbour porpoise as a qualifying feature are the Inner Hebrides and the Minches SAC (on the west coast of Scotland approximately 350 km distant)) and the Southern North Sea SAC (in the southern North Sea approximately 250 km distant).

4.2.2 Site Specific Surveys

A 24 month digital aerial survey (DAS) campaign was initiated for the Offshore Array Area in March 2021, with a planned completion date of February 2023 (final reporting expected May 2023). The Annual Report of the first year of DAS for the Offshore Array Area was shared with stakeholders (NatureScot, Marine Scotland and RSPB Scotland) on 21 September 2022. Comments were received from NatureScot, noting with respect to Annex II marine mammal species that they were surprised at the absence of dolphin (particularly white-beaked dolphin; no specific comment was made on the absence of bottlenose dolphin) and that harbour porpoise numbers are largely comparable to SCANS III (except July 2021 when densities were higher). In addition to desk top analysis of the baseline, underwater noise modelling will be undertaken to inform the assessment if impact piling is included in the EIAR project description (with more detail provided in the Scoping Report (Document: 08140473)).

4.3 Offshore and Intertidal Ornithology

4.3.1 Existing Data Sources

Key existing data sources include those associated with relevant designated sites. That information is primarily available through NatureScot[10], with links to JNCC and the wider European network where relevant. These will be drawn on as required for the subsequent assessment with respect to ornithological features screened in. The GIS files for screening, which contain all relevant site boundaries and the associated designated features, have been sourced as identified in Appendix A. Numerous SPA and Ramsar sites are located around the Scottish coastline.

[10] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-protection-areas-spas

A number of existing data sources are available for offshore and intertidal ornithology, with these summarised in Table 4.2.

Table 4.2 Non Exhaustive Summary of References for Offshore and Intertidal Ornithology

Topic	Source
Seabird Tracking Data	BirdLife International Seabird Tracking Database[11]; Other relevant data sources will also be explored, such as data owned by private entities (i.e., Universities), organisations (such as RSPB Scotland) and published (i.e., via a Boolean search).
Population data	Seabird Monitoring Programme (SMP)12 database and other relevant sources identified through the assessment planning process (i.e., SPA citation reports).
Potential impacts of offshore windfarms on ornithological receptors	E.g., Garthe and Hüppop (2004); Drewitt and Langston (2006); Stienen *et al*. (2007); Speakman *et al*. (2009); Langston (2010); Band (2012); Cook *et al*. (2012); Furness and Wade (2012); Wright *et al*. (2012); Wade *et al*., (2016); Furness *et al*. (2013); Bradbury *et al.* (2014); Johnston *et al*. (2014a; 2014b); Cook *et al*. (2014; 2018); Wade *et al.* (2016); Webb *et al.* (2016); Dierschke *et al*. (2017); Jarrett *et al*. (2018); Leopold and Verdaat (2018); Mendel *et al.* (2019); Goodale and Milman (2020); WWT and MacArthur Green (2013); Maxwell *et al.* (2022).
Bird distribution, migration and foraging movements	E.g., Stone *et al.* (1995); Brown and Grice (2005); Kober *et al*. (2010); Bradbury *et al*. 2014); HiDef Ltd. (2015); Waggitt *et al.* (2019); Cleasby *et al.* (2020); Davies *et al.* (2021); Wernham *et al*. (2002); Thaxter *et al*. (2012); Wright *et al.* (2012); Wakefield *et al.* (2013; 2017); Furness *et al*. (2018); Woodward *et al*. (2019); Buckingham *et al.* (2022).
Bird breeding ecology, population estimates and demographic rates	E.g., Cramp and Simmons (1977-94); Del Hoyo *et al.* (1992-2011); Robinson (2005); Mitchell *et al.* (2004); BirdLife International (2004); Holling *et al*. (2011); Musgrove *et al.* (2013); Furness (2015); Horswill *et al.* (2017); Frost *et al.* (2019); JNCC (2020).
Existing OWF Data	A significant amount of information from previous and current development in Scotland and the region relevant to Salamander can be found on the Marine Scotland website[13]. This information will be listed within the Scoping report and drawn upon through the HRA where necessary.
Current (at time of writing) Scoping and Screening Reports (and relevant Scoping opinions)	West of Orkney; Caledonia; Pentland Firth; Berwick Bank – Obtained via the Marine Scotland website.

4.3.2 Site Specific Surveys

A 24 month digital aerial survey (DAS) campaign was initiated for the Offshore Array Area in March 2021, with a completion date of February 2023. The campaign covers the original Area of Search (AoS) and a 4 km buffer (~133 km^2 in total), flying in a north-south orientation with a 2 km spacing for each flight. The extent of proposed digital aerial surveys has been discussed and agreed with MS-LOT and NatureScot. Since the commencement of the DAS designed for the original Area of Search, the Offshore Array Area has reduced

[11] http://www.seabirdtracking.org/
[12] https://app.bto.org/seabirds/public/index.jsp
[13] https://marine.gov.scot/mslot-all-application-and-project-documentation

in size. Data from the DAS relevant to the Offshore Array Area only plus appropriate buffer, will be analysed and presented within Technical Reporting and drawn on for the Report to Inform Appropriate Assessment. The survey comprises of 13 transects at a spacing of 2 km, providing coverage of 12.58%; this exceeds the 10% coverage proposed during pre-commencement consultation with stakeholders. At the time of writing, results from baseline surveys are available for the period March 2021 to February 2022. During these months, which cover a single annual cycle, the species recorded regularly and in the largest numbers (more than 100 birds across all surveys) are identified in Table 4.3 with a brief summary of the survey results.

Table 4.3 Bird species for which 100 or more individuals were recorded by DAS baseline surveys, March 2021 – February 2022

Species	Summary of occurrence
Common guillemot	Birds present in all surveys with the highest counts between June and October. Immature birds were noted in the July and August surveys. Majority of birds recorded sitting on the water.
Black-legged kittiwake	Highest counts in June and July with numbers also higher in August and October. Less than 20 individuals recorded in all other months. Relatively high proportion of immature birds recorded especially between June and August. High proportion of birds noted sitting on the water in summer months.
Northern gannet	Peak count in August with the only notable count in June. All but one of the remaining surveys (July) recorded fewer than 20 birds. Majority of birds were adults. Majority of birds recorded sitting on the water especially in August 2021.
Northern fulmar	Only four of the twelve surveys recorded fewer than 20 birds. Counts of over 100 birds recorded in July and October. Large proportions of birds recorded sitting on the water in autumn months.
Razorbill	Peak count in June, less than 20 individuals in nine months. Majority of birds recorded sitting on the water.
Atlantic puffin	Peak count in September with no birds recorded in March 2021 and between November and February. Majority of birds recorded sitting on the water.

Other species recorded occasionally and in small numbers (fewer than 100 birds across all surveys) were:

- Great black-backed gull – 67 birds during the non-breeding season;
- Herring gull – 44 birds, primarily in non-breeding months;
- Lesser black-backed gull – one bird in January 2022;
- European storm petrel – eight birds in August 2021;
- Arctic tern – three birds during August 2021;
- Common gull – four birds between July and October 2021; and
- Great skua – one bird in August and October 2021.

4.4 Migratory Fish and Freshwater Pearl Mussel

4.4.1 Existing Data Sources

Annex I migratory fish include a number of species that occur in UK waters, with designated sites focused on the estuarine and riverine habitats. FWPM (*Margaritifera margaritifera*) is a mollusc that occurs in rivers and streams but is included here in the HRA Screening process due to the potential for an indirect connectivity. The FWPM spends its larval stage attached to the gills of salmonid fish; therefore a potential LSE for salmon could result in an indirect potential LSE for FWPM and the species is screened following the same principles as migratory fish.

Key existing data sources include those associated with relevant designated sites. Information is primarily available through NatureScot[14], and JNCC where relevant. These will be drawn on as required for the subsequent assessment with respect to Annex II migratory fish and FWPM features screened into the assessment. The GIS files for screening, which contain all relevant site boundaries and the associated designated features, have been sourced as identified in Appendix A. The majority of SACs with migratory fish and/or FWPM as designated features are for Atlantic salmon (*Salmo salar*), with several SACs along the east coast where salmon are a designated feature, some of these also have FWPM as a feature. The River Spey SAC represents the northly range of sea lamprey (*Petromyzon marinus*) and River Teith SAC the east coast range. The River Teith SAC also holds a population of river lamprey (*Lampetra fluviatilis*). The distribution of SACs for allis and twaite shad are more to the south of England and in Wales. Data for the SAC populations is highly focused on the SAC itself.

A number of existing data sources are available for migratory fish and FWPM, including for migratory fish outside SAC boundaries. These include the following, in addition to references included in the Scoping Report (Document: 08140473):

- Early marine distribution information (Gilbey *et al.*, 2021);
- Local offshore wind farm projects (e.g. Beatrice[15]);
- The Moray Firth salmon tracking project (if results are publicly available)[16]; and
- Dee Salmon Fishery Board salmonid tracking project[17].

The assessment will review the available information on migratory fish movements once they leave the estuary and on the return migration.

4.5 Terrestrial Ecology

4.5.1 Existing Data Sources

Key existing data sources include those associated with relevant designated sites. That information is available through NatureScot[18]. These will be drawn on as required for the subsequent assessment with

[14] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-areas-conservation-sacs
[15] https://marine.gov.scot/sites/default/files/00534044.pdf
[16] https://atlanticsalmontrust.org/our-work/morayfirthtrackingproject/ https://www.deepartnership.org/project/smolt-tracking/
[17] https://www.deepartnership.org/project/smolt-tracking/
[18] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-areas-conservation-sacs and https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/european-sites/special-protection-areas-spas and https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/international-designations/ramsar-sites

respect to terrestrial ecology features screened in. The GIS files for screening, which contain all relevant site boundaries and the associated designated features, have been sourced as identified in Appendix A.

The closest SACs to the Onshore Development Area are Turclossie Moss SAC (designated for bog habitats), more than 40 km to the west, and the Sands of Forvie SAC (designated for dune habitats), more than 15 km to the south. No pathway for effect has been identified to these SACs as a result of the construction, operation and maintenance or decommissioning of the Onshore Development Area and therefore no terrestrial SAC features have been screened in for further assessment.

4.5.2 Site Specific Surveys

Consultation on wintering and migratory wildfowl surveys was undertaken with NatureScot and RSPB Scotland in September 2022. The Onshore Development Area lies within the published NatureScot connectivity (NatureScot, 2016) for the Loch of Strathbeg for the SPA species barnacle goose (*Branta leucopsis*), pink-footed goose (*Anser brachyrhynchus*) and greylag goose (*Anser anser*). The agreed survey methodology includes walk overs and observations, with surveyors recording species, number, behaviour, location and flights together with weather and any disturbance events (Document:07910160). At the time of writing, surveys are currently in progress.

5 Screening Methodology

5.1 Introduction

A precautionary approach has been adopted in screening to ensure that all potential for LSE is identified. The implication of this approach is that protected sites and features are screened in unless a clear conclusion of no LSE can be made. In some circumstances, effects can be considered de minimis. A de minimis change is one that has no appreciable effect on the protected site; in other words so negligible, restricted or remote from the protected site that the effect would not undermine the conservation objectives for the site either alone or in combination (David Tyldesley and Associates, 2015).

The aim of screening is to consider whether the project is likely to have significant effects on European site, and therefore whether an Appropriate Assessment is required. The methodology is set out here for a structured and systematic approach to screening. Potential connectivity is first established through the use of a screening parameter, which is specific to the receptor/ feature and linked to the relevant pressure, followed by consideration of the potential for LSE to result.

For assessment purposes, the terms pathway, pressure, impact and effect are used regularly and are key to how the spatial criteria applied in screening have been defined. An effect is the result of an impact(s) to receptors, which can occur when a pressure acts via (impact) pathways. Impacts may be quantified (or a view taken on magnitude) whereas an effect is simply the consequence of an impact. Possible pressures arising from the Project during all project phases have been analysed and potential impact pathways identified. For each pathway-pressure combination, a spatial criteria is defined to establish potential connectivity. Due to the different ecology of different receptor groups, different spatial criteria are applied to different receptors. Such spatial parameters relate to the range (spatial extent) of impacts and the ranging behaviour of mobile species.

As each receptor group will be sensitive to different pressures, the list of pressures will vary between receptor group, with these consulted on and agreed with stakeholders; where additions to the list of pressures per receptor group were made post consultation this is noted (Table 3.1).

5.2 Benthic Subtidal and Intertidal Ecology

Annex I habitat features are static in the sense that they occur wholly within the spatial extent of the protected site and so only the potential range of each pressure is relevant to screening. The specific pressures relevant to screening for this receptor group are detailed in Table 5.1. Where a pressure can act through a pathway beyond the footprint of the Project, a 15 km Zone of Influence (ZoI) for benthic habitats is applied. The distance was discussed and agreed at the Scoping Workshop (Table 3.1).

ODA here refers to the Offshore Development Area, with ECC referencing the Export Cable Corridor and OAA to the Offshore Array Area. C construction, O&M operation and maintenance and D decommissioning.

Table 5.1: Potential Pressures and Screening Parameters for Benthic Subtidal and Intertidal Ecology

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
Habitat loss/gain	ECC and OAA	O&M	This relates to the loss of marine seabed habitats due to installation of structures, and where relevant the associated introduction of new habitat. This is a permanent impact which occurs during the construction phase but assessed during the O&M phase. Impact is restricted to the footprint of physical structures, i.e. direct overlap.	ODA	Impact restricted to footprint of physical structures within the ODA
Direct Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to the physical impact caused by, for example, pre-sweeping, abrasion from mooring lines, cable burial, survey equipment deployment (e.g., cores, trawls), or anchors. Impact is restricted to the footprint of the Project.	ODA	Impact restricted to activities which interact with the seabed, within the ODA
Indirect Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to changes in hydrological energy flows, waves, tidal currents, sediment transport, erosion/deposition etc. arising from the physical presence of structures in the marine environment or temporary seabed preparation works. This is relevant to the construction, operation and decommissioning phases.	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)[19]
Suspended Sediments	ECC and OAA	C, O&M and D	Increased turbidity from disturbance of seabed sediments.	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)
Invasive Non-Native Species (INNS)	ECC and OAA	C, O&M and D	INNS can smother/replace existing habitats.	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)
Toxic Contamination	ECC and OAA	C, O&M and D	This relates to reduced water or sediment quality from, for example, spillages or	15 km	Footprint of the Project (ODA) plus

[19] Note that 15 km has been applied throughout here for the benthic habitat ZoI (as feature and/or potentially supporting habits). It is acknowledged that variable ranges are used on plans and projects, with 15 km applied here on a precautionary basis. It is noted that 10 km for example has been applied on recent projects in Scotland (Pentland and West of Orkney) and the Renewables Atlas indicates a tidal elipse of 12-13 km in the Project area. Should Project level technical reporting indicate a larger range than 15 km, then this will be revisited.

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
			mobilisation of contaminated sediments.		15 km buffer (to account for ZoI)

The Offshore Development Area has been applied in a GIS screening tool developed by NIRAS for The Crown Estate, together with the above screening parameters, to determine which designated site(s) with Annex I benthic habitat feature(s) are located within the relevant ranges. A site/feature within that range would be screened in for the relevant pressure(s), project phase(s) and project aspect(s) unless it is clear that no potential for connectivity exists (for example the feature is located above high water and the pressure is subtidal and as discussed in consultation, see Table 3.1) or it can be concluded that the potential for effect would be de minimis, with no appreciable effect on the site[20].

5.3 Marine Mammals

Annex II marine mammal species are highly mobile so both the potential zone of influence (ZoI) for each pressure and the ranging behaviour of each species (and their prey) are relevant to screening. The specific pressures relevant for this receptor group are detailed in Table 5.25.2. It is noted that recent screening reports for offshore wind, including those for floating wind projects in Scottish waters, have applied varying screening parameters for marine mammals to take account of both the potential ZoI of different pressures and the highly mobile nature of the species. This has resulted in distances applied varying between 20 and 200 km, as well as the use of Management Units (e.g. Moray West (2017), Highland Wind Ltd. (2022), Xodus (2022)). For the Project, 200 km is applied as a conservative value to exceed the expected ZoI of all Project level pressures and to reflect ranging behaviour.

The approach to screening for marine mammals was discussed at the Scoping Workshop (Table 3.1) and agreed with stakeholders. It should be noted that while the distance of 200 km was agreed as appropriate for screening purposes, NatureScot indicated that site connectivity for seals could be assumed to be 50 km for harbour seal and 20 km for grey seal, given the site importance in the breeding season and based on tagging data. That potential for connectivity will be used in assessment alongside predicted impact ranges such as underwater noise modelling.

ODA here refers to the Offshore Development Area, with ECC referencing the Offshore Export Cable Corridor and OAA to the Offshore Array Area. C construction, O&M operation and maintenance and D decommissioning.

[20] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62011CC0258&from=GA

Table 5.2: Potential Pressures and Screening Parameters for Marine Mammals

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
Underwater Noise	ECC and OAA	C, O&M, D	Underwater noise may lead to death, injury or disturbance and be direct or indirect (e.g., through impacts upon prey) impacts to marine mammals.	200 km	Footprint of the Project (ODA) plus 200 km buffer (to account for wide ranging species outside the designated site boundary)
Collision	OAA	O&M	The risk of collision with marine mammals is in the context of WTG structures only. Entanglement considered separately.	200 km	Footprint of the Project (ODA) plus 200 km buffer (to account for wide ranging species outside the designated site boundary)
Indirect Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to changes in hydrological energy flows, waves, tidal currents, sediment transport, erosion/deposition etc. arising from the physical presence of structures in the marine environment or temporary seabed preparation works. Indirect impact to potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of wider habitat availability, with indirect impact to SACs considered only.	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)[21]
Entanglement	OAA	O&M	This relates to primary entanglement with mooring lines and cables and secondary entanglement with derelict fishing gear associated with turbine infrastructure	200 km	Footprint of the Project (ODA) plus 200 km buffer (to account for wide ranging species outside the designated site boundary)
Direct Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to the physical impact caused by, for example, pre-sweeping, abrasion from mooring lines, cable burial, survey equipment deployment (e.g., cores, trawls), or anchors. Loss of potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of wider habitat availability, with direct overlap with SACs considered only.	ODA	Impact restricted to activities which interact with the seabed, within the ODA
Physical presence	OAA	O&M	This relates to the potential for the physical presence of offshore wind farm structures such as WTG floating foundations to cause disturbance to individuals or a barrier to the movement of mobile species or result in an 'artificial	200 km	Footprint of the Project (ODA) plus 200 km buffer (to account for wide ranging species outside the designated site boundary)

[21] Note that 15 km has been applied throughout here for the benthic habitat ZoI (as feature and/or potentially supporting habits). It is acknowledged that variable ranges are used on plans and projects, with 15 km applied here on a precautionary basis. It is noted that 10 km for example has been applied on recent projects in Scotland (Pentland and West of Orkney) and the Renewables Atlas indicates a tidal elipse of 12-13 km in the Project area. Should Project level technical reporting indicate a larger range than 15 km, then this will be revisited.

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
			reef' effect with respect to marine mammal prey. This is relevant to the operational phase only. It is recognised that some structures will be present during construction, but effects will be assessed when all structures are present and over the full life of the Project. Potential for disturbance from vessels would be included with the footprint of the Salamander Array in any case or, when on transit, be trivial in the context of existing shipping and therefore screened out.		
Habitat loss/gain	ECC and OAA	O&M	This relates to the loss of marine habitat due to installation of structures, and where relevant the associated introduction of new habitat. This is a permanent impact which occurs during the construction phase but will be assessed during operation and maintenance phase. Loss of potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of wider habitat availability, with direct overlap with SACs considered only.	ODA	Impact restricted to activities which interact with the seabed, within the ODA
Toxic Contamination	ECC and OAA	C, O&M and D	This relates to reduced water or sediment quality from, for example, spillages or mobilisation of contaminated sediments.	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)
EMF	ECC and OAA	O&M	EMF to be considered as a pressure in relation to indirect impacts via effects on marine mammal prey species, but not directly for marine mammals (as advised in the Scoping Workshop, see Table 3.1	ODA	Impact restricted to immediate vicinity of the cables, within the ODA

The Development Area has been applied in a GIS screening tool developed by NIRAS for The Crown Estate, together with the above screening parameters, to determine which designated site(s) with Annex II marine mammal feature(s) are located within the relevant ranges; a site/feature within that range would be screened in for potential LSE for the associated pressure(s), project phase(s) and project aspect(s) unless it is clear that no potential for connectivity exists or it can be concluded that the potential for effect would be de minimis, with no appreciable effect on the site[22].

[22] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62011CC0258&from=GA

5.4 Offshore and Intertidal Ornithology

5.4.1 Overview

Bird species are highly mobile so both the potential zone of influence (ZoI) for each pressure and the ranging behaviour of the species (and their prey) are relevant to screening. The specific pressures relevant for this receptor group are detailed in Table 5.3.

The bird species likely to occur in the Offshore Array Area can be grouped into a series of categories for the purposes of this screening exercise. This categorisation is based on biological relationships related to phenology, feeding, habitat use and migratory pathways. The categories are:

- Breeding seabirds in the breeding season (e.g. black-legged kittiwake at the East Caithness Cliffs SPA);
- Breeding seabirds in the non-breeding season (e.g. black-legged kittiwake at the East Caithness Cliffs SPA outside of the breeding season);
- Non-breeding seabirds (e.g. red-throated diver at the Moray Firth SPA);
- Migrating seabirds (little gull, tern species, petrel species, shearwater species, skua species); and
- Migrating waterbirds.

Screening for birds therefore incorporates more steps than for the other receptor groups and has been undertaken in two discrete stages. Step 1 Screening for ornithology (see Section 5.4.2) will use a predefined set of screening criteria to identify SPAs and Ramsar sites with relevant ornithological features which have potential connectivity to the Project. Potential connectivity does not necessarily equate to a potential LSE, with that determined in Step 2 Screening (see Section 5.4.3). Once potential connectivity has been determined with relevant SPAs and Ramsar sites and associated relevant features, those sites and features will subsequently be progressed to the determination of potential LSE stage.

5.4.2 Step 1: Identification of Potential Connectivity

The pressures associated with the development of an offshore wind farm are identified in Table 5.3. Step 1 of the proposed screening approach identifies potential connectivity between the pressures associated with the Project and features of SPAs. To do this the spatial extents of both the pressures and distribution of birds need to be defined. The table below identifies the spatial extents associated with each pressure. The terms ODA here refers to the Development Area, ECC the Offshore Export Cable Corridor, OAA to the Offshore Array Area, and the terms C (construction), O&M (operation and maintenance) and D (decommissioning) refer to the project stage the pressure will be assessed for (if screened in).

Table 5.3: Potential Pressures and Screening Parameters for Offshore and Intertidal Ornithology

Potential Impact	Project Aspect	Project Phase	Pressure Detail	Spatial extent of pressure
Physical Presence (visual disturbance/ displacement and barrier effects)	ECC and OAA	C, O&M and D	This pressure relates to the disturbance/ displacement and barrier effect that could occur if birds avoid the area occupied by the wind farm during operation and/or the vessels and activities involved during construction / operation / decommissioning.	Footprint of the Project and species-specific buffers based on JNCC *et al.* (2017).
Indirect physical impact (to habitat)	ECC and OAA	C, O&M and D	This relates to changes in hydrological energy wave exposure etc. arising from the physical presence of structures in the marine environment.	Footprint of the Project plus 15 km buffer associated with tidal extent
Collision	OAA	O&M	This pressure relates to the mortality arising from birds colliding with turbine structures. This only occurs within the wind farm area once operational.	Footprint of the Project only
Entanglement	OAA	C, O&M and D	This relates to primary entanglement with mooring lines associated with turbine infrastructure and secondary entanglement for example in ghost fishing gear. Note diving birds are likely to be displaced by the Salamander Array, therefore reducing the risk.	Footprint of the Project only
Habitat loss/ gain	ECC and OAA	O&M	Development could result in the loss of those habitats that directly support the features of an SPA/Ramsar. This is a permanent impact which occurs during the construction phase but assessed during the O&M phase and is restricted to the footprint of physical structures.	Footprint of the Project only
Direct physical impact (to habitat)	ECC and OAA	C, O&M and D	This relates to the physical impact to habitat caused by, for example, cable burial, abrasion from mooring lines, survey equipment deployment (e.g. cores, trawls), or anchors.	Footprint of the Project only
Underwater noise	ECC and OAA	C and D	Underwater noise may lead to disturbance and direct or indirect (e.g., through impacts upon prey) impacts to bird features. The pressure is considered in relation to all phases of development, although it is probable that the highest emissions of underwater noise in terms of the range of effect will occur during construction.	Footprint of the Project plus 2 km buffer based on buffer used within assessments of vessel disturbance
Above water noise	ECC and OAA	C, O&M and D	This pressure relates to the disturbance that could arise from the noise generated by construction and decommissioning activities or the movement of vessels.	Footprint of the Project plus 2 km buffer based on buffer used within assessments of vessel disturbance

Potential Impact	Project Aspect	Project Phase	Pressure Detail	Spatial extent of pressure
Toxic contamination	ECC and OAA	C, O&M and D	This relates to reduced water quality from, for example, spillages or mobilization of contaminated sediments.	Footprint of the Project plus 15 km buffer associated with tidal extent
Light	ECC and OAA	C, O&M and D	The behaviour of birds could be affected by light pollution.	Footprint of the Project plus 15 km buffer
Suspended sediments	ECC and OAA	C, O&M and D	Increased turbidity from disturbance of seabed sediments.	Footprint of the Project plus 15 km buffer associated with tidal extent

The spatial criteria applied for each of the bird categories are:

- Breeding seabirds in the breeding season – the 'Foraging Ranges' screening tool is applied for relevant breeding seabirds. This was developed by NIRAS for NatureScot and applies the recommended screening parameters (i.e., Woodward *et al*., 2019, mean maximum foraging range plus 1SD). It is understood that this tool and guidance from NatureScot will be 'live' in early 2023. The Foraging Ranges screening tool enables users to define or upload a shapefile of the proposed development areas. The tool then identifies where the Offshore Array Area overlaps with a foraging range(s) and provides a list of sites and features for which the determination of No LSE has been undertaken. Revision of the results has been undertaken to allow consideration of at-sea distances for species unlikely to cross land.
- Breeding birds in non-breeding seasons (biologically defined minimum population size (BDMPS)) – breeding birds from SPAs and Ramsars in the nonbreeding season are not constrained to specific areas due to the necessity to provision young, and typically disperse to exploit areas far beyond their breeding colonies. During the non-breeding season, therefore, the birds present within the Offshore Array Area may originate from sites that are further away than those considered in the breeding season. Furness (2015) considered how non-breeding birds dispersed, defining the regions within which those populations would be distributed and for each region a BDMPS was calculated. Screening has applied those BDMPS regions and populations. Where the Offshore Array Area overlaps with a BDMPS region, potential connectivity is assumed with the population associated with that region (as defined by Furness, 2015) and the SPAs that contribute to that population;
- Non-breeding seabirds – SPA or Ramsar boundary only; and
- Migrating seabirds (little gull, tern species, petrel species, shearwater species, skua species) and migratory waterbirds – Migratory waterbirds and seabirds that breed in sites designated as SPA/ Ramsar in areas of the UK that are distant from the Offshore Array Area have some potential to interact with the Offshore Array Area during bi-annual migratory movements. Information has been gleaned from relevant data sources to infer potential connectivity, namely; Wright *et al*., 2012, WWT and MacArthur Green (2014) and seabird tracking data (i.e., Buckingham *et al*., 2022).

A GIS has been used to determine physical overlap between the spatial criteria associated with each pressure and those associated with each bird category. It was agreed in the scoping workshops that certain

pressures have not been included as they are not believed to be relevant to ornithology. These are as follows:

- EMF;
- Temperature;
- Invasive species; and
- Salinity.

The Ornithology Screening Step 1 above has resulted in a long list of sites and features (all of which are provided in Appendix B), for which potential LSE has been determined through Ornithology Screening Step 2.

5.4.3 Step 2: Determination of LSE

Based on the criterion outlined above under Step 1 (Section 3.2.1), the SPAs and Ramsar sites for which potential connectivity with the Offshore Array Area cannot be ruled out have been taken forward for determination of potential LSE in Ornithology Screening Step 2. The process has been informed by published guidance and literature on species sensitivities (i.e., Wade *et al*., 2016, Bradbury *et al*., 2014 and Maxwell *et al*., 2022), behaviour (i.e., Woodward *et al*., 2019 colony specific data, Wakefield *et al*., 2017) and distribution (i.e., site specific survey data, Waggitt *et al*., 2019). It is noted that Marine Scotland have commissioned a project assessing migratory collision risk at a strategic level which is yet to be published. This will be used to inform the assessments required if it is published in time to inform the RIAA. If not further information including in relation to the likely risk to migratory waterbirds and seabirds will be used.

It is important to note that the process has taken account of feedback from the Scottish Minister's Scoping Opinions of various Scottish projects and further consultation meetings with other statutory consultees.

How Step 2 has been applied is detailed in Section 6.4.2, with Screening conclusions presented in tabular format in Appendix B, to be clear on the designated sites and features screened in together with the associated pressures identified through the application of the screening tool and determination of potential LSE.

5.5 Migratory Fish and Freshwater Pearl Mussel

Annex II migratory fish are highly mobile so both the potential zone of influence (ZoI) for each pressure and the ranging behaviour of the species (and their prey) are relevant to screening. FWPM are a wholly freshwater species, with potential for an indirect link through salmon. The specific pressures relevant for this receptor group are detailed in Table 5.4. It is noted that recent screening reports for offshore wind, including those for floating wind projects in Scottish waters, have applied varying screening parameters for migratory fish; most recently these have included 600 km from Pentland Floating Offshore Wind Farm with that is applied here for consistency and as a precaution (Xodus 2022).

The approach to screening for migratory fish and FWPM was discussed at the Scoping Workshop (Table 3.1) and agreed with stakeholders.

ODA here refers to the Offshore Development Area, ECC the Offshore Export Cable Corridor, OAA the Offshore Array Area, C construction, O&M operation and maintenance and D decommissioning.

Table 5.4: Potential Pressures and Screening Parameters for Migratory Fish and Freshwater Pearl Mussel

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
Underwater Noise	ECC and OAA	C, O&M, D	Underwater noise may lead to death, injury or disturbance and direct or indirect (e.g. through impacts upon prey) impacts to migratory fish.	600 km	Footprint of the Project (ODA) plus 600 km buffer (to account for wide ranging species outside the designated site boundary)
Habitat loss/gain	ECC and OAA	O&M	This relates to the loss of marine habitat due to installation of structures, and where relevant the associated introduction of new habitat. This is a permanent impact which occurs during the construction phase but will be assessed during operation and maintenance phase. Loss of potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of wider habitat availability, with direct overlap with SACs considered only. Habitat loss/ gain outside a site boundary is addressed through the pressure 'physical presence'.	ODA	Impact restricted to footprint of physical structures within the ODA
Direct Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to the physical impact to marine habitat caused by, for example, pre-sweeping, abrasion from mooring lines, cable burial, survey equipment deployment (e.g. cores, trawls), or anchors. Loss of potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of the primarily benthic nature of the habitat loss and wider habitat availability, with direct overlap with SACs considered only.	ODA	Impact restricted to activities which interact with the seabed, within the ODA
Indirect Physical Impact (to habitat)	ECC and OAA	C, O&M and D	This relates to changes in hydrological energy flows, waves, tidal currents, sediment transport, erosion/deposition etc. arising from the physical presence of structures in the	15 km	Footprint of the Project (ODA) plus 15 km buffer (to account for ZoI)[23]

[23] Note that 15 km has been applied throughout here for the benthic habitat ZoI (as feature and/or potentially supporting habits). It is acknowledged that variable ranges are used on plans and projects, with 15 km applied here on a precautionary basis. It is noted that 10 km for example has been applied on recent projects in Scotland (Pentland

Potential Pressures	Project Aspect	Project Phase	Pressure Detail	Screening Parameter	Justification
			marine environment or temporary seabed preparation works. Indirect impact to potentially supporting habitat outside a designated site boundary is deemed inconsequential in the context of the primarily benthic nature of the habitat loss and wider habitat availability, with indirect impact to SACs considered only.		
Suspended sediments	ECC and OAA	C, O&M and D	Increased turbidity from disturbance of seabed sediments.	600 km	Footprint of the Project (ODA) plus 600 km buffer (to account for wide ranging species outside the designated site boundary)
Toxic contamination	ECC and OAA	C, O&M and D	This relates to reduced water or sediment quality from, for example, spillages or mobilisation of contaminated sediments.	600 km	Footprint of the Project (ODA) plus 600 km buffer (to account for wide ranging species outside the designated site boundary)
EMF	ECC and OAA	O	There is evidence that some species of fish are sensitive to magnetic fields (Gill *et al*., 2005) and although there is considerable uncertainty about the importance of this sensitivity in the context of EMF associated with submarine power cabling, this potential impact will be considered. This pressure does not apply to shad for which there is no evidence of magnetic sensitivity.	600 km	600 km from ODA
Physical presence	OAA	O&M	This relates to the potential for the physical presence of offshore wind farm structures such as turbines and foundations to cause disturbance to individuals, a barrier to the movement of mobile species or result in an 'artificial reef' effect (noting potential for predator or prey aggregation).	600 km	Footprint of the Project (ODA) plus 600 km buffer (to account for wide ranging species outside the designated site boundary)
Entanglement	OAA	O&M	This relates to primary entanglement with mooring lines and cables and secondary entanglement with derelict fishing gear associated with turbine infrastructure	600 km	Footprint of the Project (ODA) plus 600 km buffer (to account for wide ranging species outside the designated site boundary)

The Development Area has been applied in a GIS screening tool developed by NIRAS for The Crown Estate, together with the above screening parameters, to determine which designated site(s) with Annex II

and West of Orkney) and the Renewables Atlas indicates a tidal elipse of 12-13 km in the Project area. Should Project level technical reporting indicate a larger range than 15 km, then this will be revisited.

migratory fish and FWPM feature(s) are located within the relevant ranges; a site/feature within that range would be screened in for potential LSE for the associated pressure(s), project phase(s) and project aspect(s) unless it is clear that no potential for connectivity exists or it can be concluded that the potential for effect would be de minimis, with no appreciable effect on the site[24].

5.6 Terrestrial Ecology

During the Scoping Workshops, the distance between the Project and sites designated for Annex I and II features onshore was highlighted (Table 3.1, with context in Section 4.5). It is clear that there is a considerable distance between the boundary of the Onshore Development and all such sites and features. Given the scale and nature of the Project (Section 1.1) and the distance between the Onshore Development and these sites, the expectation that all such sites and features would be screened out of further assessment was raised and agreed in the Scoping Workshop (Table 3.1) on the basis of a lack of pathway.

Onshore ecology is considered here only in the context of supporting habitat (outside a designated site). As noted in Section 4.5.2, the Onshore Development lies within the published NatureScot connectivity (NatureScot, 2016) for the Loch of Strathbeg for the SPA species barnacle goose (*Branta leucopsis*), pink-footed goose (*Anser brachyrhynchus*) and greylag goose (*Anser anser*). Potential for LSE for onshore ecology is therefore focused on these species at the Loch of Strathbeg for the SPA and Ramsar.

[24] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:62011CC0258&from=GA

6 Screening Conclusions

6.1 Introduction

The application of the approach to screening presented in Section 5 provides a clear list of protected sites, features and pressures where potential for connectivity exists. For offshore ornithology in Section 5.4, the two step approach to screening enables the multiple species to be fully considered and takes account of factors such as phenology, feeding, habitat use and migratory pathways. The results from offshore ornithology Screening Step 1 are presented in Appendix B, with the results from offshore ornithology Screening Step 2 presented below in Section 6.4.

6.2 Benthic Subtidal and Intertidal Ecology

The protected sites and features where potential for connectivity has been identified for benthic subtidal and intertidal ecology are summarised in Table 6.1, including the relevant pressures, project phase and project aspect. The conclusion on the potential for LSE confirms those sites and features that will progress forward for assessment (noting that the distances provided are measured in a straight line and do not account for terrain).

Table 6.1: Sites and Features where potential for connectivity exists for Benthic Subtidal and Intertidal Ecology

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Buchan Ness to Collieston SAC	7 km	Vegetated sea cliffs of the Atlantic and Baltic coasts	ECC	C, O&M, D	Indirect physical damage Toxic contaminants Suspended sediments Invasive species	No LSE (as agreed in Table 3.1) as the feature is wholly above high water, whereas the relevant pressures act wholly below water and therefore no potential connectivity and no potential LSE

The location of the site considered for potential LSE for benthic ecology has been identified in Table 6.1, and its location relative to the location of the Project is shown in Figure 6.2

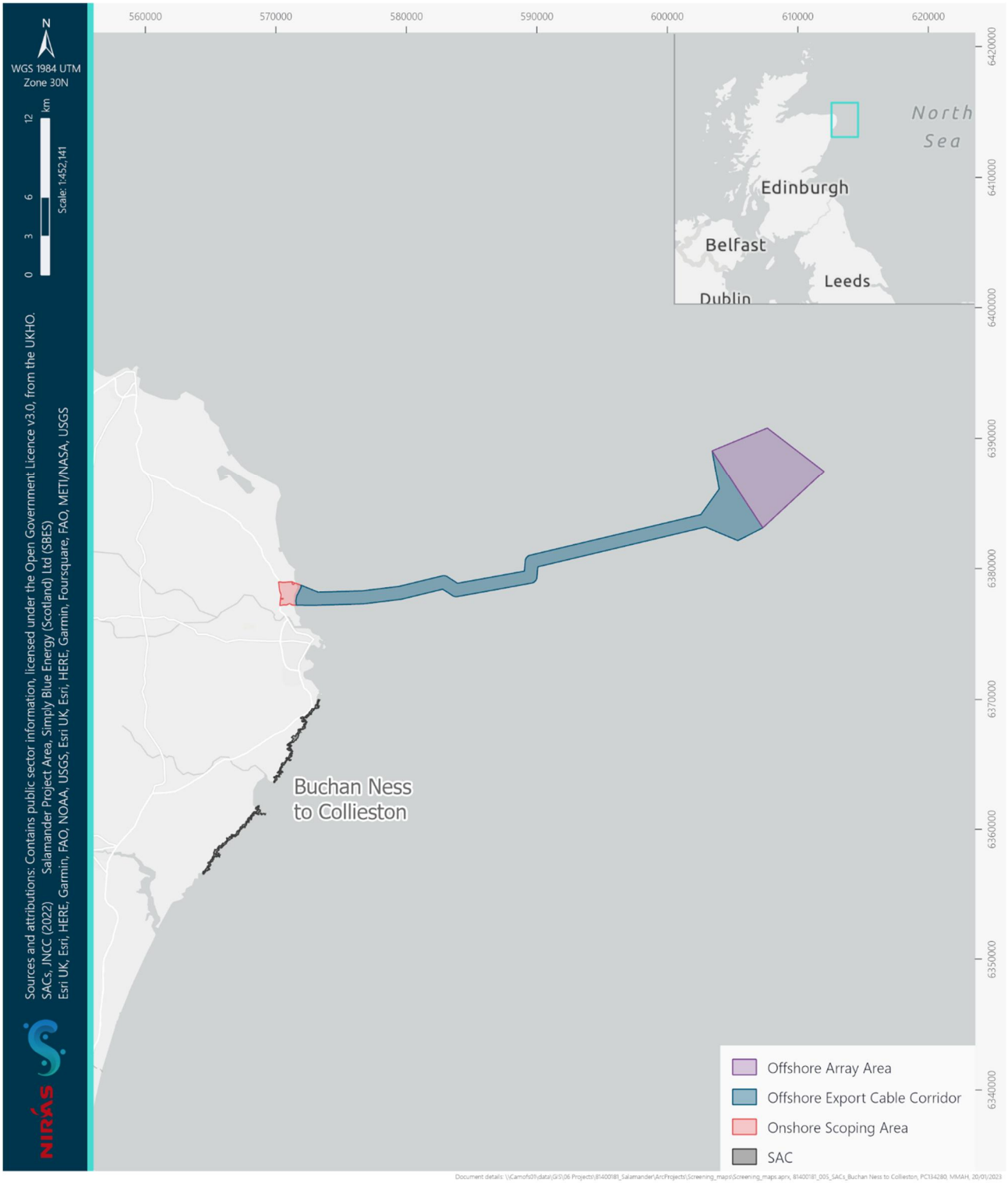


Figure 6.1: Location of Site considered for potential LSE for Benthic Ecology

6.3 Marine Mammals

The protected sites and features where potential for connectivity has been identified for marine mammals are summarised in Table 6.2, including the relevant pressures, project phase and project aspect. The conclusion on the potential for LSE confirms those sites and features that will progress forward for assessment (noting that the distances provided are measured in a straight line and do not account for terrain).

Table 6.2: Sites and Features where potential for connectivity exists for Marine Mammals

Protected Site	Distance from Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Berwickshire and North Northumberland Coast SAC	177 km (landfall) 191 km (offshore array area)	Grey seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Faray and Holm of Faray SAC	193 km (landfall) 196 (offshore array area)	Grey seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Dornoch Firth and Morrich More SAC	125 km (landfall) 156 km (offshore array area)	Harbour seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Moray Firth SAC	89 km (landfall) 120 km (offshore array area)	Bottlenose dolphin	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Sanday SAC	189 km (landfall) 190 km (offshore array area)	Harbour seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE

Protected Site	Distance from Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Isle of May SAC	155 km (landfall) 174 km (offshore array area)	Grey seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE
Firth of Tay and Eden Estuary SAC	127 km (landfall) 174 km (offshore array area)	Harbour seal	Offshore Array Area	C, O&M, D	Underwater noise Entanglement	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement	Potential for LSE
			Offshore Export Cable	C, O&M, D	Underwater noise	Potential for LSE

The location of the sites where potential for LSE has been identified in Table 6.2 relative to the location of the Project is shown in Figure 6.2

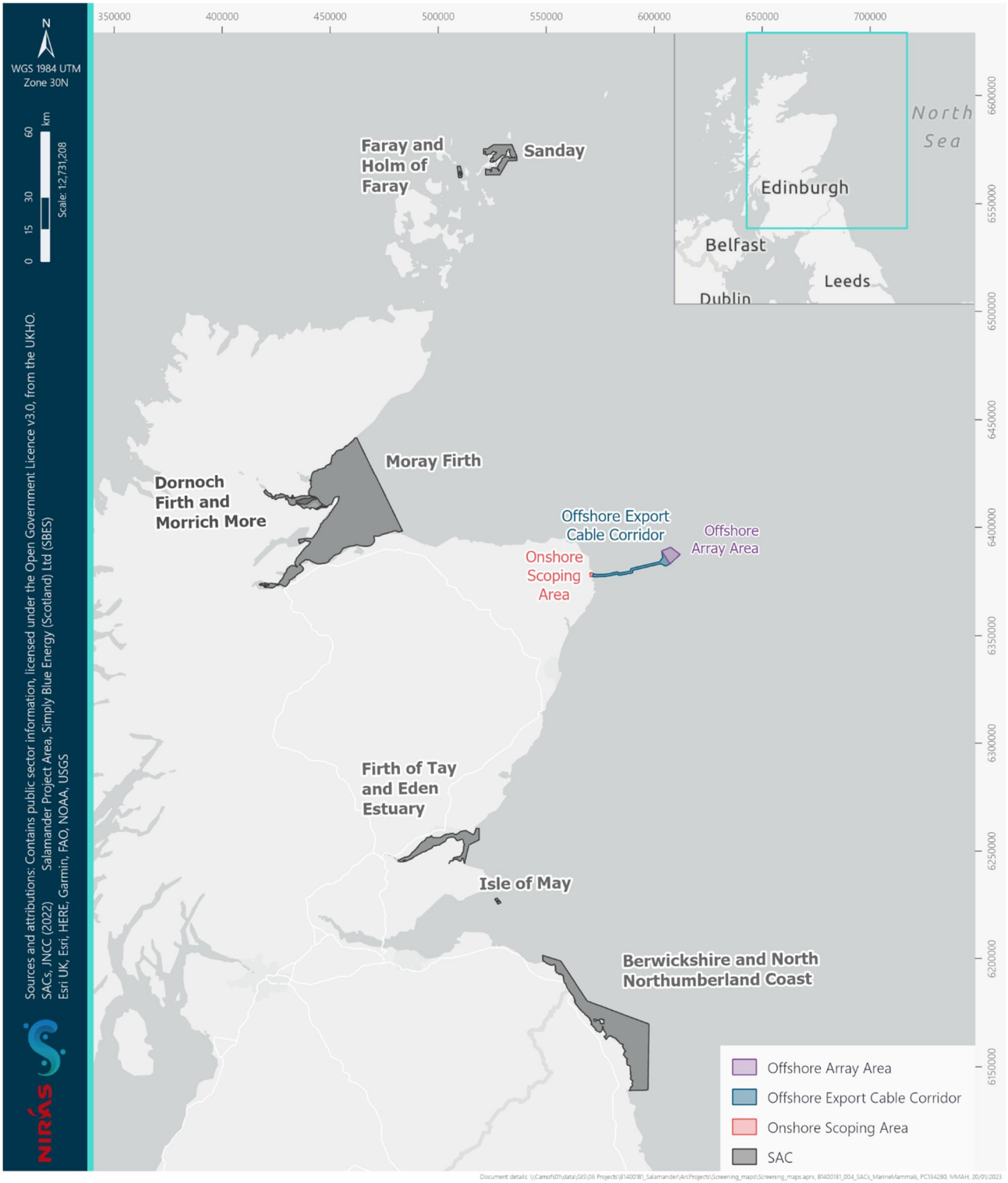


Figure 6.2: Location of Sites Screened in for Marine Mammals

6.4 Offshore and Intertidal Ornithology

6.4.1 Step 1: Identification of Potential Connectivity

Step 1 has identified 51 SPAs and 149 associated features and 5 Ramsars and 8 associated features that have potential connectivity with the Offshore Array Area. A full list of these is provided in Appendix A.

6.4.2 Step 2: Determination of LSE

6.4.2.1 *Foraging distances applied over land*

The screening tool does not discriminate between land and sea and there are occasions where the foraging range of a feature appears to intersect with the Offshore Array Area, but this has only occurred because the tool has projected this range across an intervening land mass. It is highly unlikely that seabirds will traverse significant distances over land in order to forage. In these cases a judgement is made as to whether connectivity would still be indicated if foraging was restricted only to sea areas. This applies to the following SPAs and associated features which are removed from further consideration (i.e. SPAs are located in the west and southwest of the UK):

- Northern gannet at the Ailsa Craig SPA;
- Northern fulmar at the Isles of Scilly SPA;
- Black-legged kittiwake at the Rum SPA;
- Black-legged kittiwake at The Shiants SPA; and
- Storm petrel and the Treshnish Isles SPA.

6.4.2.2 *Vulnerability of species to impacts associated with offshore wind farms*

The screening exercise has been conducted assuming that all pressures are applicable to all features. This is, however, not realistic with some species having no vulnerability to certain impacts. Table 6.3 identifies the vulnerability for each species for which potential connectivity between the Project and an SPA or Ramsar at which they are a feature has been identified. Vulnerability is identified in Table 6.3 for all pressures except for light for which a suitable vulnerability index does not exist. As a result the potential effects of attraction to light will be assessed for all features for which potential LSE is identified. Assessments for collision will only be undertaken if a feature has a vulnerability of Moderate or higher. Assessments for physical presence (visual disturbance/displacement and barrier effects) will only be undertaken if a feature has a vulnerability to 'displacement associated with structures' or 'displacement associated with vessels/helicopters' of Moderate or higher and/or a Low habitat flexibility. The exception to the latter criteria is black-legged kittiwake for which assessments for displacement associated with structures will be undertaken based on the advice of NatureScot and Marine Scotland to previous offshore wind projects in Scottish waters. Assessments for indirect physical impact (to habitat), habitat loss/gain, direct physical impact (to habitat), and suspended sediments will only be conducted where a species has a low habitat flexibility. Assessments for toxic contamination and entanglement will also only be conducted where a species has a vulnerability of Moderate or higher. Those species for which vulnerability to certain pressures is considered too low to result in LSE are identified in Table 6.3 using green shading.

Table 6.3: Vulnerability of Seabird Species to Certain Impacts with Potential Connectivity to the Project

Species	Collision [25]	Displacement associated with structures (physical presence, (visual disturbance/displacement and barrier effects))[26]	Disturbance associated with vessels/helicopters (physical presence, visual disturbance/displacement and barrier effects, underwater noise, above water noise)[19]	Habitat flexibility (indirect physical impact (to habitat), habitat loss/gain, direct physical impact (to habitat), suspended sediments)[27]	Toxic contamination[28]	Drowning risk (entanglement)[29]
Northern gannet	High	High	Very low	High	Moderate	Moderate
Storm petrel	Low	Very low	Very low	High	Low	Low
Common guillemot	Very Low	High	Moderate	Moderate	High	High
Northern fulmar	Very Low	Very Low	Very Low	High	Moderate	Low
Herring gull	Very High	Low	Very Low	High	Moderate	Low
Black-legged Kittiwake	Very High	Low	Low	Moderate	Moderate	Low
Shag	Moderate	Very Low	High	Moderate	High	High

[25] Wade *et al.,* (2016) provides a vulnerability score which has been translated as follows: >201 = Very High, 101-200 = High, 51-100 = Moderate, 1-50 = Low, 0 = Very Low

[26] The numerical rankings in Wade *et al.* (2016) have been translated to vulnerability as follows: 5 = Very High, 4 = High, 3 = Moderate, 2 = Low and 1 = Very Low

[27] The numerical rankings in Wade *et al.* (2016) have been translated to vulnerability as follows: 4 = Low, 3 = Moderate, 2 = Moderate and 1 = High

[28] Scores from Webb *et al.,* (2016) have been translated as follows: ≤0.249 = Low, 0.250-0.749 = Moderate, ≥0.750 = High

[29] Scores from Wade *et al.* (2016) have been translated to vulnerability as follows: 4 = High, 3 = Moderate, 2 = Moderate, 1 = Low

Species	Collision [25]	Displacement associated with structures (physical presence, (visual disturbance/displacement and barrier effects))[26]	Disturbance associated with vessels/helicopters (physical presence, visual disturbance/displacement and barrier effects, underwater noise, above water noise)[19]	Habitat flexibility (indirect physical impact (to habitat), habitat loss/gain, direct physical impact (to habitat), suspended sediments)[27]	Toxic contamination[28]	Drowning risk (entanglement)[29]
Atlantic puffin	Very Low	Moderate	Moderate	Moderate	High	Moderate
Manx shearwater	Very Low	Very Low	Very Low	High	Moderate	Low
Lesser black-backed gull	Very High	Low	Very Low	High	Moderate	Low
Razorbill	Very Low	High	Moderate	Moderate	High	High
Great skua	Very High	Very Low	Very Low	Moderate	Moderate	Low
Leach's petrel	Low	Very Low	Very Low	High	Low	Low
Sandwich tern	Very High	Low	Low	Moderate	Moderate	Low
Common tern	N/A (potential connectivity with cable only)	N/A (potential connectivity with cable only)	Low	Moderate	Moderate	N/A (potential connectivity with cable only)
Eider	N/A (potential connectivity with cable only)	N/A (potential connectivity with cable only)	Moderate	Low	Moderate	N/A (potential connectivity with cable only)
Little tern	N/A (potential connectivity with cable only)	N/A (potential connectivity with cable only)	Low	Low	Moderate	N/A (potential connectivity with cable only)

6.4.2.3 *Abundance of species at the Offshore Array Area*

Section 4.3 provides a brief summary of the baseline characterisation surveys that have been undertaken as part of the first year of the baseline survey programme within which the Offshore Array Area is located. Screening draws on the entire dataset (the full AoS), however the subsequent RIAA will focus on data from the Development Area including the final Offshore Array Area. The surveys, across the wider AoS, identified six regularly occurring species (identified in Table 4.3 and including common guillemot, black-legged kittiwake, northern gannet, northern fulmar, razorbill and Atlantic puffin) and potential for LSE will therefore be identified for these species as features at which potential connectivity has been identified (excluding those that have been discounted due to other factors identified as part of Step 2). A further seven species were recorded during surveys (great black-backed gull, herring gull, lesser black-backed gull, European storm petrel, Arctic tern, common gull and great skua) and, in relation to breeding birds in the breeding season, potential connectivity was identified for SPAs at which only four of these are features (herring gull, lesser black-backed gull, European storm petrel and great skua).

Potential connectivity was identified for herring gull between the Offshore Array Area and the Buchan Ness to Collieston Coast SPA, Fowlsheugh SPA and Troup, Pennan and Lion's Heads SPA. During the breeding season (March to August - breeding season as defined by NatureScot (2020)) herring gull was recorded in the whole survey area in March, June and August surveys albeit only 15 birds in total. A number of these were outside of the Offshore Array Area plus a 4 km buffer and would therefore not be included in the densities required for collision risk modelling. However, the Offshore Array Area is located within the more realistic mean-maximum foraging range for the species (Woodward *et al.,* 2019) and it is possible that inter-annual variability in the distribution of birds from these colonies may lead to higher abundances in the second year of baseline surveys.

Potential connectivity was identified for lesser black-backed gull between the Offshore Array Area and the Loch Leven Ramsar, Coquet Island SPA and Forth Islands SPA. During the breeding season (mid-March to August –breeding season as defined by NatureScot (2020)) lesser black-backed gull was not recorded. The two SPAs and one Ramsar at which this species is a feature are located beyond the more ecologically realistic mean-maximum foraging range for the species (Woodward *et al.,* 2019). No LSE is therefore identified for lesser black-backed gull as a feature of the Coquet Island SPA and Forth Islands SPA during the breeding season.

Potential connectivity was identified for European storm petrel between the Offshore Array Area and the Auskerry SPA, Mousa SPA, North Ronaldsay SPA, Sule Skerry and Sule Stack SPA and Treshnish Isles SPA. The only records of European storm petrel during baseline surveys were eight individuals in August. Distribution data from Waggitt *et al.* (2019) and Kober *et al.* (2010) indicate only limited densities of storm petrel would be expected in the Offshore Array Area during the breeding season. It is therefore considered that due to the low abundance of the species there is no potential for an LSE in the breeding season for any of the SPAs for which potential connectivity was identified.

Potential connectivity was identified for great skua between the Offshore Array Area and the Fair Isle SPA, Fetlar SPA, Foula SPA, Handa SPA, Hermaness, Saxa Vord and Valla Field SPA, Hoy SPA, Ronas Hill – North Roe and Tingon SPA and Ramsar and St Kilda SPA. Only two great skuas were recorded during baseline surveys, one in August and one in October. Although both records were within the 4 km buffer associated with the survey area, both fall outside of the Offshore Array Area plus a 4 km buffer. It is therefore considered that there is no potential of an LSE in the breeding season for any of the SPAs for which potential connectivity was identified.

There are a number of other species that were not recorded during baseline surveys for which potential connectivity between the Offshore Array Area and SPAs at which they are features have been identified. This includes Leach's petrel, Manx shearwater, Sandwich tern and shag. Both Leach's petrel and Manx shearwater have considerable foraging ranges (Woodward *et al.,* 2019) meaning that potential connectivity is often identified between the Offshore Array Area and all SPAs at which both species are qualifying features. However, distribution maps for both species from Kober *et al.* (2010) show limited densities in the North Sea during the breeding season. Shag have a much more restricted foraging range (Woodward *et al.,* 2019) when compared to Leach's petrel and Manx shearwater but the distribution and abundance of birds presented in Waggitt *et al.* (2019) and Kober *et al.* (2010) corresponds with the results of the baseline surveys showing densities of 0 birds/km^2 in the area in which the Offshore Array Area is located. It is therefore considered that there is no potential for LSE for any SPAs with which potential connectivity was identified for Leach's petrel and Manx shearwater with all aspects of the Offshore Array Area. However, for shag, LSE is only discounted for pressures associated with the Offshore Array Area with Kober *et al.,* (2010) showing higher densities closer to the coast where the Offshore Export Cable may make landfall. Sandwich tern is discussed further in Section 6.4.2.4.

As a result, the following SPAs and associated features are removed from further consideration:

- Lesser black-backed gull at the Loch Leven Ramsar;
- Lesser black-backed gull at the Coquet Island SPA;
- Lesser black-backed gull at the Forth Islands SPA;
- European storm petrel at the Auskerry SPA;
- European storm petrel at the Mousa SPA;
- European storm petrel at the North Ronaldsay SPA;
- European storm petrel at the Sule Skerry and Sule Stack SPA;
- European storm petrel at the Treshnish Isles SPA;
- Great skua at the Fair Isle SPA;
- Great skua at the Fetlar SPA;
- Great skua at the Foula SPA;
- Great skua at the Handa SPA;
- Great skua at the Hermaness, Saxa Vord and Valla Field SPA;
- Great skua at the Hoy SPA;
- Great skua at the Ronas Hill – North Roe and Tingon SPA and Ramsar;
- Great skua at the St Kilda SPA;

- Leach's petrel at all SPAs for all aspects of the Offshore Array Area;
- Manx shearwater at all SPAs and Ramsar sites for all aspects of the Offshore Array Area[30]; and
- Shag at all SPAs for all aspects of the Offshore Array Area.

6.4.2.4 *Site-specific foraging range data*

The foraging range tool used to identify potential connectivity between the Offshore Array Area and SPAs in the breeding season incorporates a number of site-specific foraging ranges for certain colonies. However, there is further information that would suggest connectivity between the Offshore Array Area and some of the SPAs at which northern gannet is a qualifying feature does not exist. Northern gannet are known to exhibit segregation in relation to the foraging areas utilised by birds from different breeding colonies (Wakefield *et al*., 2013). The area of the Scottish North Sea in which the Offshore Array Area is located is utilised by birds from the Forth Islands SPA (Wakefield *et al*., 2013). However, tracking data is not available for all SPAs at which northern gannet is a qualifying feature and so the information presented in Wakefield *et al.* (2013) can only really be used to exclude SPAs for which there is tracking data and show no connectivity with the Offshore Array Area. Of the SPAs for which potential connectivity with the Offshore Array Area has been identified, the tracking data in Wakefield *et al.* (2013) shows no connectivity between the Offshore Array Area and the Ailsa Craig SPA, Flamborough and Filey Coast SPA, St Kilda SPA and Sule Skerry and Sule Stack SPA. There is therefore considered to be no potential for LSE for northern gannet at these SPAs during the breeding season.

Sandwich tern were unrecorded during baseline surveys of the Offshore Array Area. Potential connectivity was identified for Sandwich tern between the Offshore Development Area and the Loch Strathbeg SPA and the Ythan Estuary, Sands of Forvie and Meikle Loch SPA. Tracking data for Sandwich tern from the latter of these colonies shows limited use of the offshore environment by tracked birds with birds travelling along

[30] The citation document for the Outer Ards Ramsar on the DAERA website (https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Outer%20Ards%20Citation%20and%20Map.pdf) which was collated in 2005 includes Manx shearwater as a qualifying feature. However, the Ramsar Information Sheets available from the JNCC website (https://jncc.gov.uk/jncc-assets/RIS/UK12018.pdf) and the Ramsar website (https://rsis.ramsar.org/RISapp/files/RISrep/GB2279RIS_1701_en.pdf) do not include this species as a qualifying feature. The Ramsar Information Sheet from DAERA indicates that the population of Manx shearwater at the Ramsar was from the Seabird 2000 survey however, there is no evidence of a population of Manx shearwater for the Outer Ards Ramsar (or SPA which includes the Ramsar boundary) on either the Seabird Monitoring Programme website or in Mitchell *et al*. (2004) or any of the previous seabird censuses. The Northern Ireland seabird reports (e.g. Allen *et al*. 2014 and Booth Jones *et al.* 2022) suggest that the only extant colony in Northern Ireland is on the Copeland Islands with one having previously existed on Rathlin Island, no mention is made of colonies within the Outer Ards Ramsar/SPA.
The Outer Ards Ramsar covers the Northern Irish coast to the south-east of the Copeland Islands (note that the Copeland Islands are not included within the boundary of the Ramsar). It is therefore considered that even if birds were present at the Ramsar that, based on based on the tracking data for the Copeland Islands SPA in Dean *et al.* (2012) there would be no connectivity with the Offshore Array Area.

the coast to the north and south of the colony (Wilson *et al.,* 2014). The utilisation of the marine environment by birds from the colony shows limited, if any, usage of the Offshore Array Area by birds from this SPA. It is therefore considered there that is no potential for LSE for the Sandwich tern feature of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA for pressures associated with the Offshore Array Area. There is no tracking data for Sandwich tern from the Loch of Strathbeg SPA and the SPA is within the more realistic mean-maximum foraging range of the species (Woodward *et al.,* 2019). It is possible that inter-annual variability in the distribution of birds from these colonies may lead to higher abundances in the second year of baseline surveys and therefore potential LSE for Sandwich tern at this SPA is not discounted.

Dean *et al.* (2012) presents tracking data for Manx shearwater at breeding colonies located within the Copeland Islands SPA, Rum SPA and Skomer, Skokholm and Seas off Pembrokeshire SPA. The tracking data presented shows no connectivity with the Offshore Array Area and therefore no LSE is identified for these SPAs. Birds from the Copeland Islands SPA and Skomer, Skokholm and Seas off Pembrokeshire SPA are utilising foraging areas associated with the Irish Sea Front. It is considered that birds from other SPAs for which connectivity with the Offshore Array Area has been identified will also utilise this area and show no connectivity with the Offshore Array Area. LSE is therefore also discounted for the Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA.

As a result, the following SPAs and associated features are removed from further consideration:

- Northern gannet at the Ailsa Craig SPA;
- Northern gannet at the Flamborough and Filey Coast SPA;
- Northern gannet at the St Kilda SPA;
- Northern gannet at the Sule Skerry and Sule Stack SPA;
- Sandwich tern at the Ythan Estuary, Sands of Forvie and Meikle Loch SPA (Array only);
- Manx shearwater at the Copeland Islands SPA;
- Manx shearwater at the Rum SPA;
- Manx shearwater at the Skomer, Skokholm and Seas off Pembrokeshire SPA; and
- Manx shearwater at the Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA.

6.4.2.5 *Migratory seabirds and waterbirds*

Potential connectivity has been identified for a large number of migratory waterbird features and three migratory seabird features in relation to collision risk impacts. A strategic cumulative assessment of collision risk has previously been conducted for migratory birds in Scottish waters (WWT Consulting and MacArthur Green, 2014). This assessment concluded that at a strategic level the populations of the migratory birds considered in the report do not appear to be at risk of significant levels of additional mortality associated with Scottish wind farms. This assessment was undertaken in 2014 and therefore did not incorporate the Offshore Array Area. The projects incorporated included Beatrice, Moray Firth Round 3 (Moray East), the European Offshore Wind Development Centre, Neart na Gaoithe, Inch Cape, Seagreen (Alpha and Bravo), Argyll Array, Islay and Robin Rigg. Of these, two, Argyll Array and Islay were not progressed. There are also now additional projects in Scottish waters that were not incorporated into this assessment including Moray

West, Kincardine and Hywind. For Moray West, Marine Scotland advised that because the strategic assessment was undertaken on a worst case basis, that a number of projects had been withdrawn and that the design envelopes for consented schemes had been substantially refined reducing risk levels that there was sufficient 'flex' in the report to indicate that any potential impact from Moray West would be within the impact magnitude predicted in the strategic assessment.

The Offshore Array Area will have a total capacity of up to 100 MW consisting of up to seven turbines. A project of this size is highly unlikely to provide a material contribution to the current level of existing collision risk. It is therefore considered that the additional impact associated with the Offshore Array Area is already covered by the conclusions reached in the strategic assessment and LSE can be discounted for all SPAs with which potential connectivity has been identified in Step 1.

It should be noted that an updated strategic assessment for migratory waterbirds and seabirds is currently underway however, this report is to be commissioned by Marine Scotland Science (MSS). If this assessment becomes available in time to inform the assessments required for the Offshore Array Area then it will be incorporated into the assessments.

6.4.2.6 *Breeding seabirds in the non-breeding season*

Outside of the breeding season, seabirds disperse or migrate to sea areas that are often different to those that they utilise in the breeding season. At this time of year breeding seabirds are not constrained to specific sea areas due to the necessity to provision young and are therefore able to exploit much larger areas; however, the availability of prey may be reduced. The Offshore Array Area will have a total capacity of up to 100 MW consisting of up to seven turbines covering an area of ≤ 33.25 km^2. This would represent a negligible proportion of the area available to seabirds in the non-breeding season with many species migrating to areas outside of the North Sea. It is considered highly unlikely that the Offshore Array Area will provide a material contribution of any existing impact in the non-breeding season and therefore LSE is discounted for any SPA for which potential connectivity has been identified in the non-breeding seasons only (as relevant to each species). For features where potential LSE has been identified in the breeding season, consideration will be given to impacts occurring across the entire annual cycle in the RIAA. It is understood that there is forthcoming research detailing the results of a tracking study of common guillemot and razorbill in the non-breeding season which could suggest higher levels of usage of the Offshore Array Area by birds from specific breeding colonies. It is anticipated that this research will be available in early-2023 and the conclusions presented here in relation to LSE will be reviewed based on the information in any publications associated with that research.

6.4.2.7 *SPAs for which potential LSE has been identified*

Building on Step 1 (with all sites and features identified under Step 1 provided in Appendix B), the conclusions of Step 2 are provided here. The protected sites and features where potential for LSE has been identified for offshore and intertidal ornithology are summarised in Table 6.4, including the relevant

pressures, project phase and project aspect. The conclusion on the potential for LSE confirms those sites and features that will progress forward for assessment.

Table 6.4: Sites and Features where potential for LSE exists for Offshore and Intertidal Ornithology

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Buchan Ness to Collieston Coast SPA	36 km	Common guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Shag	ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Calf of Eday SPA	195 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Cape Wrath SPA	233 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
					underwater noise, above water noise, toxic contamination	
Copinsay SPA	160 km	Common guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Coquet Island SPA	250 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			OAA	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
East Caithness Cliffs SPA	134 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Fair Isle SPA	206 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Northern gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Farne Islands SPA	216 km	Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Fetlar SPA	323 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Flannan Isles SPA	377 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Forth Islands SPA	172 km	Northern gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Foula SPA	276 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Fowlsheugh SPA	91 km	Common guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
					underwater noise, above water noise, toxic contamination	
Handa SPA	243 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Hermaness, Saxa Vord and Valla Field SPA	343 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Northern gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Hoy SPA	171 km	Common guillemot	ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Loch of Strathbeg SPA and Ramsar	35 km	Sandwich tern	OAA	C, O&M and D	Collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Marwick Head SPA	203 km	Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Mingulay and Berneray SPA	391 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
North Caithness Cliffs SPA	147 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Razorbill	ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
North Rona and Sula Sgeir SPA	310 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Northern gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Noss SPA	275 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Northern gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Northumbria Coast Ramsar	209 km	Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Rathlin Island SPA	395 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Ronas Hill – North Roe and Tingon Ramsar	319 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Rousay SPA	197 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
St Abb`s Head to Fast Castle SPA	192 km	Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
St Kilda SPA	427 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Sule Skerry and Sule Stack SPA	242 km	Atlantic puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
Sumburgh Head SPA	244 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
The Shiant Isles SPA	300 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE

Protected Site	Distance from Offshore Array Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Troup, Pennan and Lion`s Heads SPA	54 km	Common guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
		Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Potential for LSE
West Westray SPA	207 km	Northern fulmar	OAA	C, O&M and D	Toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Black-legged kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Potential for LSE
			ECC	C, O&M and D	Toxic contamination	Potential for LSE
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	41 km	Common tern	ECC	C, O&M and D	Toxic contamination	Potential for LSE
		Eider	ECC	C, O&M and D	Indirect physical impact (to habitat), toxic contamination, suspended sediments	Potential for LSE
		Little tern	ECC	C, O&M and D	Indirect physical impact (to habitat), toxic contamination, suspended sediments	Potential for LSE
		Sandwich tern	ECC	C, O&M and D	Toxic contamination	Potential for LSE

The location of the sites where potential for LSE has been identified for offshore and intertidal ornithology relative to the location of the Offshore Array Area is shown in Figure 6.3.

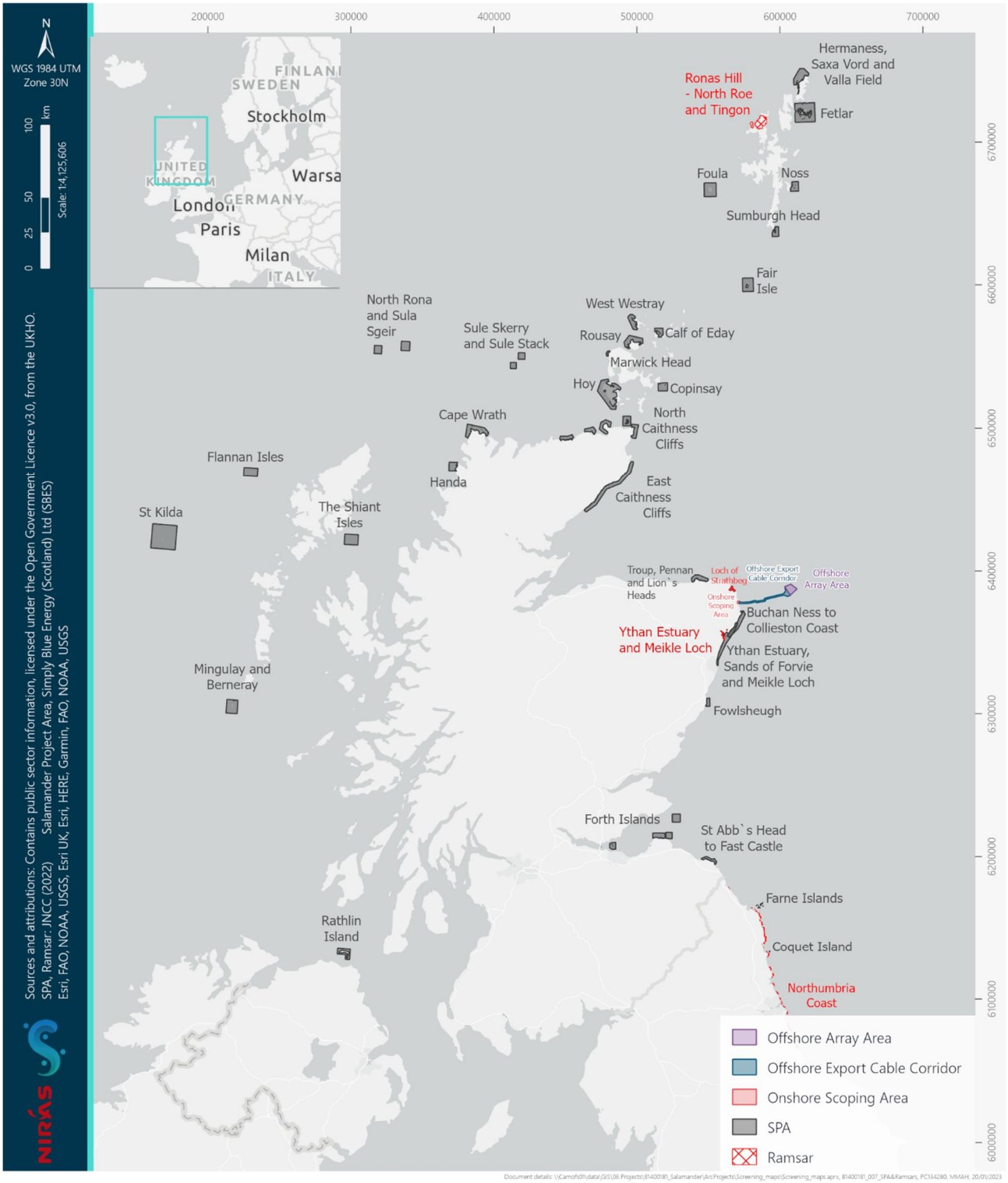


Figure 6.3: Location of Sites Screened in for Offshore and Intertidal Ornithology

6.5 Migratory Fish and Freshwater Pearl Mussel

The protected sites and features where potential for connectivity has been identified for migratory fish and FWPM are summarised in Table 6.5, including the relevant pressures, project phase and project aspect. Given the large screening distance applied (600 km) there are a substantial number of SACs identified. In addition, the screening tool developed by NIRAS for The Crown Estate does not discriminate between land and sea and there are occasions where the 600 km screening distance from the Offshore Development Area appears to intersect with an SAC, but this has only occurred because the tool has projected this range across an intervening land mass (with the actual 'swim distance' being greater than 600 km). In these cases the site and feature (s) are not progressed further (as the actual distance exceeds 600 km), with the following SAC and features removed from screening as a result and therefore not included in Table 6.5:

- Afon Eden - Cors Goch Trawsfynydd SAC (Atlantic salmon and FWPM);
- Afon Gwyrfai a Llyn Cwellyn SAC (Atlantic salmon);
- Afon Teifi/ River Teifi SAC (river lamprey and Atlantic salmon);
- Cardigan Bay/ Bae Ceredigion SAC (sea lamprey and river lamprey);
- Cladagh (Swanlinbar) River SAC (FWPM);
- Dee Estuary/ Aber Dyfrdwy SAC (Sea lamprey and river lamprey);
- Endrick Water SAC (river lamprey and Atlantic salmon);
- Lough Melvin SAC (Atlantic salmon);
- Owenkillew River SAC (Atlantic salmon and FWPM);
- River Bladnoch SAC (Atlantic salmon);
- River Clun SAC (FWPM);
- River Dee SAC (Atlantic salmon and FWPM);
- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC (sea lamprey, river lamprey, Atlantic salmon);
- River Derwent and Bassenthwaite Lake SAC (sea lamprey, river lamprey, Atlantic salmon);
- River Eden SAC (sea lamprey, river lamprey, Atlantic salmon);
- River Ehen SAC (Atlantic salmon and FWPM);
- River Faughan and Tributaries SAC (Atlantic salmon);
- River Foyle and Tributaries SAC (Atlantic salmon);
- River Kent SAC (FWPM);
- River Moidart SAC (FWPM);
- River Roe and Tributaries SAC (Atlantic salmon);
- River Wye/ Afon Gwy SAC (sea lamprey, river lamprey, allis shad, twaite shad, Atlantic salmon);
- Solway Firth SAC (sea lamprey, river lamprey);
- Tweed Estuary SAC (sea lamprey, river lamprey); and
- Upper Ballinderry River SAC (FWPM).

Additional consideration is given in Table 6.5 to the potential of LSE for those SACs where the designated site boundary is within a 600 km 'swim distance' from the Project (assuming the most direct route) but are at the upper end of that range (and therefore at considerable distance beyond the Project Zone of Influence (ZoI and the likelihood of a de minimis effect, if any, is high)). For these SACs, the potential for connectivity to the Project ZoI is considered in the context of the relative location of the SAC, the species involved and

existing knowledge of potential routes taken by fish leaving the SAC (where known, e.g. Gilbey *et al.*, 2021). As a result, and in particular the sites to the east of Scotland, a number of SACs that have potential to be within a 600 km 'swim distance' from the Project are identified as having no potential for LSE in Table 6.5. The SACs identified by the screening tool developed by NIRAS for The Crown Estate (but excluding those listed above) are detailed in Table 6.5 under broad geographic areas, moving in a generally anti-clockwise direction from the farthest sites on the east coast of England. The conclusion on the potential for LSE confirms those sites and features that will progress forward for assessment.

Table 6.5: Sites and Features where potential for connectivity exists for Migratory Fish and Freshwater Pearl Mussel

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Sites on the east coast of England						
River Derwent SAC	380 km	Sea lamprey River lamprey	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river lamprey[31], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Humber Estuary SAC	429 km	Sea Lamprey River lamprey	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	

[31] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
						lamprey[32], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
Tweed Estuary SAC	207 km	Sea lamprey River lamprey	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river lamprey[33], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Sites on the east coast of Scotland						
River Tweed SAC	204 km	Sea lamprey River lamprey Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	River and sea lamprey: Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river lamprey[34], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	

[32] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/
[33] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/
[34] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
						Atlantic salmon: Potential for LSE
River Teith SAC	228 km	Sea lamprey River lamprey Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	River and sea lamprey: Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river lamprey[35], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE. Atlantic salmon: Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Tay SAC	147 km	Sea lamprey River lamprey Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	River and sea lamprey: Given the geographic location of the SAC in comparison to the Offshore Development (with potential for impact via the mobile species and not direct between Offshore Development and SAC), the widely dispersed nature of sea lamprey offshore and primarily estuarine nature of river lamprey[36], the extent of alternative habitat across the North Sea, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE. Atlantic salmon: Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	

[35] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/

[36] https://www.gov.scot/publications/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/pages/25/

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Rannoch Moor SAC	226 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Highlighted in the NatureScot advice package as overlapping with the River Tay SAC. Potential for LSE via the migratory fish species that the FWPM depend on.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River South Esk SAC	126 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Spey SAC	109 km	Sea lamprey Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Moriston SAC	206 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	The River flows into the northern side of Loch Ness, which is linked to the Moray Firth via the River Ness. Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Evelix SAC	169 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Oykel SAC	185 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Berriedale and Langwell Waters SAC	146 km	Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Sites on the north coast of Scotland						
River Thurso SAC	153 km	Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	Potential for LSE

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Naver SAC	189 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, and the distance between both locations, potential for connectivity is limited. On a precautionary basis, potential for LSE is identified.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Borgie SAC	201 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, and the distance between both locations, potential for connectivity is limited. On a precautionary basis, potential for LSE is identified.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Sites on the west coast of Scotland						
Foinaven SAC	222 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Abhainn Clais an Eas and Allt a' Mhuilinn SAC	242 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Ardvar and Loch a' Mhuilinn Woodlands SAC	233 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Inverpolly SAC	229 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Langavat SAC	327 km	Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination	

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
					Suspended sediments	
North Harris SAC	333 km	Atlantic salmon FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Little Gruinard River SAC	243 km	Atlantic salmon	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
River Kerry SAC	261 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Glen Beasdale SAC	280 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	

Protected Site	Distance from Offshore Development Area	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	No potential for LSE.
Ardnamurchan Burns SAC	311 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
Mingarry Burn SAC	318 km	FWPM	OAA	O&M	Physical presence EMF Entanglement	Given the geographic location of the SAC in comparison to the Offshore Development, existing knowledge of salmon migration at sea, the widely available habitat to the species and the distance between both locations, potential for connectivity is highly limited, insignificant and de minimis. No potential for LSE.
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	
			ECC	O&M	EMF	
				C, O&M, D	Underwater noise Toxic contamination Suspended sediments	

The location of the sites where potential for LSE has been identified in Table 6.5 relative to the location of the Project is shown in Figure 6.4.

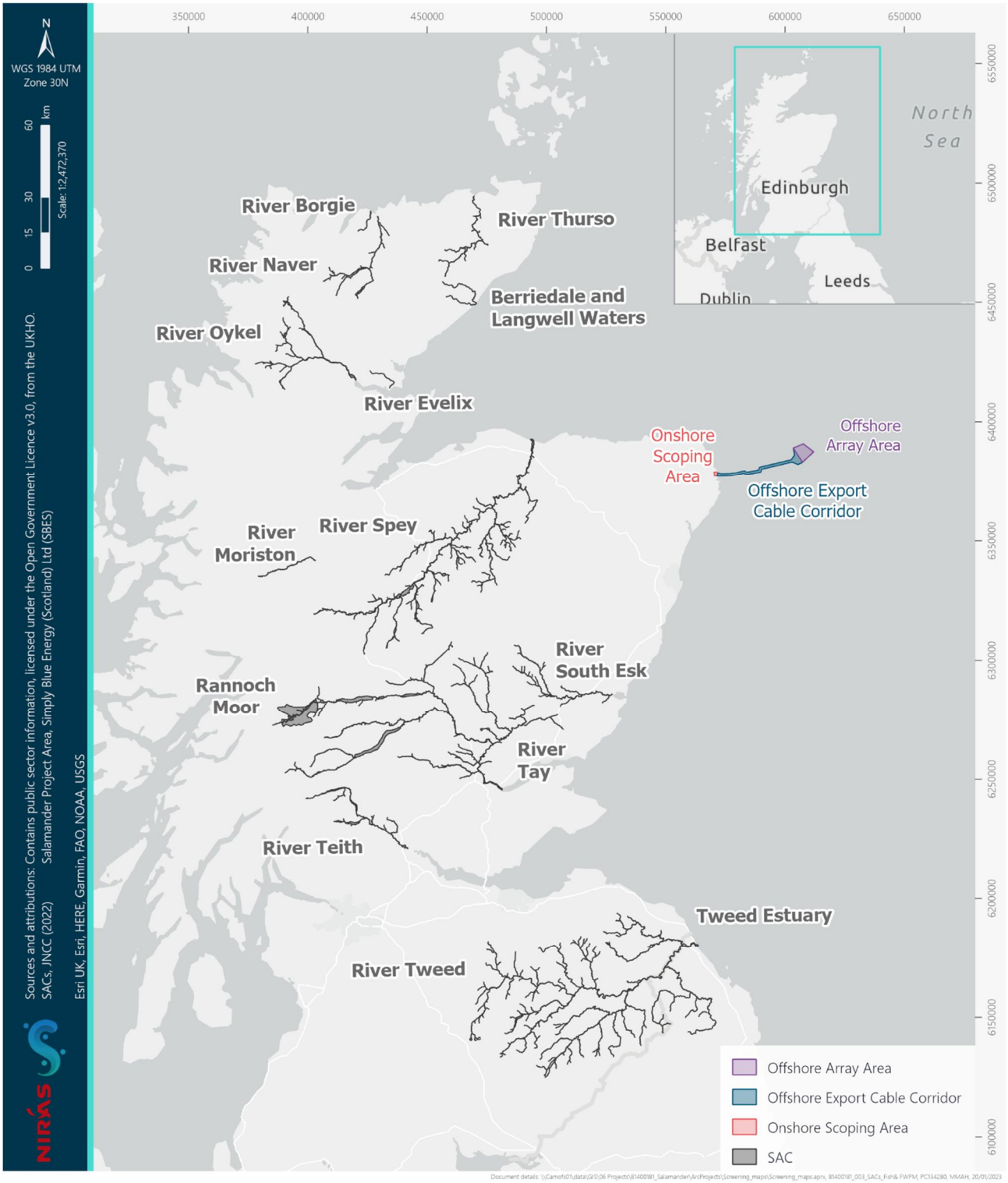


Figure 6.4: Location of Sites Screened in for Migratory Fish and Freshwater Pearl Mussels

6.6 Terrestrial Ecology

The protected sites and features where potential for connectivity has been identified for terrestrial ecology are summarised in Table 6.6, including the relevant pressures, project phase and project aspect. The conclusion on the potential for LSE confirms those sites and features that will progress forward for assessment.

Table 6.6: Sites and Features where potential for connectivity exists for Terrestrial Ecology

Protected Site	Distance from Onshore Development	Feature	Project Aspect	Project Phase	Pressure	Determination of LSE
Loch Strathbeg SPA and Ramsar	7 km	Barnacle goose Pink footed goose Greylag goose	Onshore cable corridor, onshore substation and EBI	C, O&M, D	Physical presence Indirect physical impact (to habitat) Habitat loss/gain Direct physical impact (to habitat) Above water noise	Potential for LSE

The location of the sites where potential for LSE has been identified for terrestrial ecology relative to the location of the Onshore Development is shown in Figure 6.5.

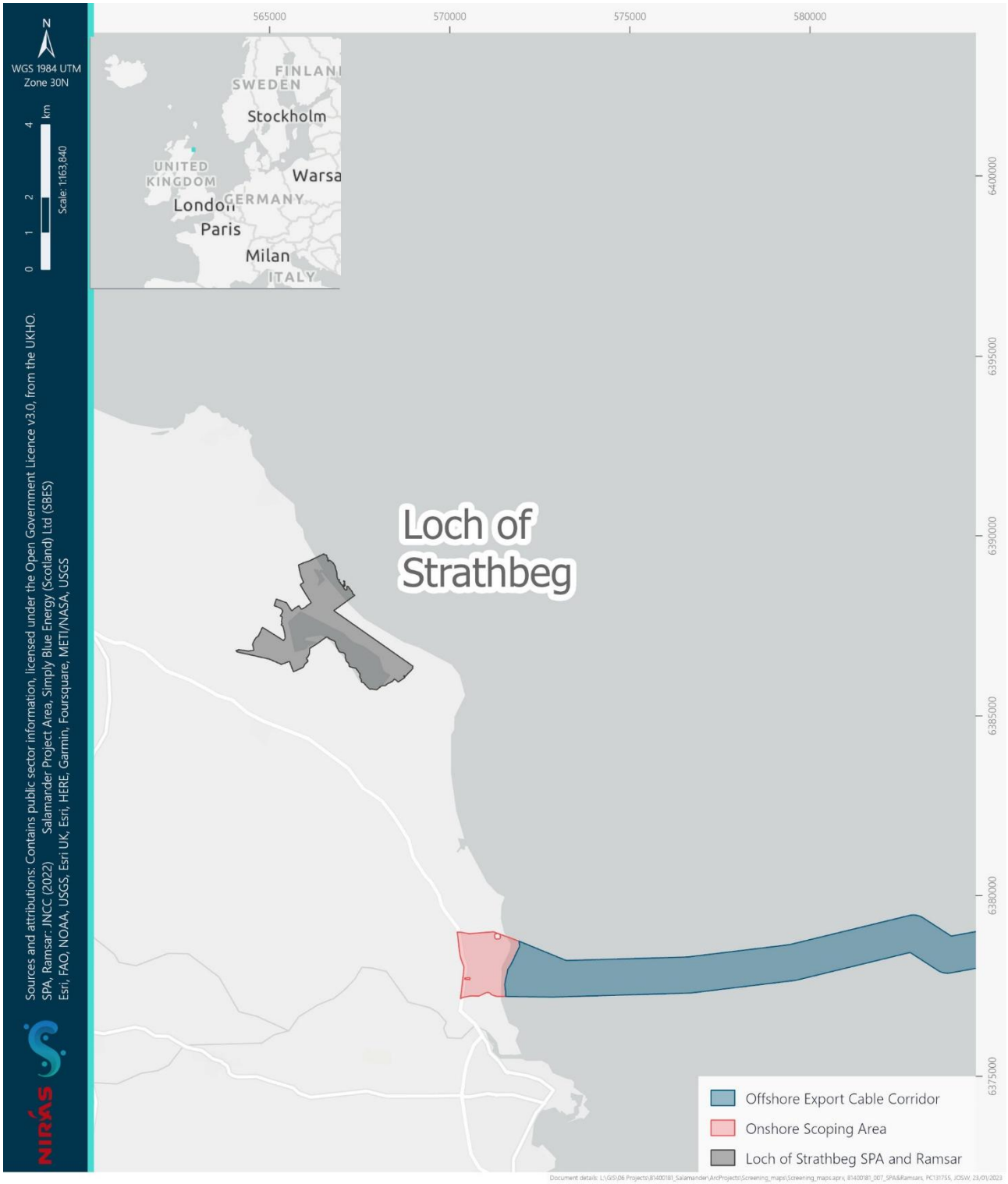


Figure 6.5: Location of Sites Screened in for Terrestrial Ecology

7 Screening In-combination

7.1 Introduction

Where the screening for the Salamander Offshore Wind Farm (the 'Project') alone has identified a potential for LSE, then it will be assumed that there is potential for the Project alone to contribute to an in-combination LSE.

The determination of potential for LSE alone has been made here on a highly precautionary basis and initially considers the potential for connectivity (with that being the determining factor for benthic (Section 6.2) and marine mammal (Section 6.3) features). However, for some receptor groups (notably ornithology (Section 6.4) and migratory fish (6.5)) following the initial consideration of potential connectivity highlighted by the use of GIS, when determining the potential for LSE alone consideration has also been given to factors such as the presence of an impact pathway, site specific foraging ranges, the presence or absence of the feature at the Development Area, the distance to travel (when distance In a straight line over land is excluded) and the potential for connectivity based on species ecology and not a fixed range. Where potential for LSE is determined on a basis other than potential connectivity (as initially established using a fixed range in GIS), it is noted that there remains the potential for a trivial and inconsequential effect alone (where no potential for LSE is concluded) to contribute to a significant effect in-combination. For the sites and features where GIS initially identified potential for connectivity but no potential for LSE has been concluded, it is considered extremely unlikely that any contribution to a significant in-combination effect will result from the Project (for the same reasons as for why no potential for LSE alone has been concluded). Should that a potential LSE in-combination be identified during subsequent assessment or consultation, the conclusions on screening will be revisited in HRA stage 2 (Report to Inform Appropriate Assessment).

It should be noted that given the precautionary nature of screening, it is possible for some sites/features screened in for potential LSE for the Project alone to be found to have no pathway/connectivity in assessment and therefore no potential for the Project to contribute to any in-combination effect. In addition, should the Project alone be found to have a de minimis level of effect, the potential to contribute to an in-combination impact will also be considered on a de minimis basis and screened out. Finally, for an in-combination effect to result to a specific protected site and feature, there needs to be a plan or project acting in-combination.

The in-combination assessment will therefore assess the potential for the Project to contribute to an in-combination effect where:

- The Project alone has potential for a measurable impact (noting that a de minimis effect should be considered trivial and inconsequential); and
- There is a plan or project to act in-combination.

As is standard for in-combination assessments for offshore wind, a tiered approach to plans and projects in-combination will be applied, to take account of plan and project certainty (for example a project in early stages of planning compared to a project with consent). How plans and projects are assigned to tiers will be defined on a receptor group basis and, where relevant, will include operational projects with ongoing effects (e.g. collision risk). Where an impact is temporally limited (e.g. underwater noise) this will also be a consideration in the assessment.

At this point, a definitive list of plans and projects to consider in-combination has not been produced. However, it is expected that the following non-exhaustive list will require consideration, specifically to include plans and projects which are "reasonably foreseeable" (i.e. developments for which there is sufficient design information in the public domain, for example, offshore renewable energy projects that have been scoped):

- Projects already constructed;
- Projects under construction;
- Permitted application(s), but not yet implemented;
- Submitted application(s) not yet determined; and
- Plans and projects which are "reasonably foreseeable" (i.e. developments for which there is sufficient design information in the public domain, for example, offshore renewable energy projects that have been scoped)).

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Appendix A: Metadata for the Designated Site Boundary Files

Data	Data Created	Raw Source File Name	Source Data Owner	Source	Downloaded Data	Data Date	Data Checked if older than 6 months
UK Natura 2000 data	18.02.21	UK-Natura2000-2020-12-18 UK_RAMSAR_DATA_20151021	JNCC	https://hub.jncc.gov.uk/assets/a3d9da1e-dedc-4539-a574-84287636c898 http://archive.jncc.gov.uk/default.aspx?page=2392	27.11.22 14.05.20	01.09.22 12.07.19	27.11.22 Nothing more recent on website-JNCC have been asked directly, awaiting response
Assemblages data	01.01.21	Assemblages data 2021	NE, NRW, DAERA citations referred to.	NIRAS compiled	N/A	01.01.21	N/A
Non-UK Natura 2000	22.02.21	Natura2000_end2021_Shapefile.zip	EEA	https://www.eea.europa.eu/data-and-maps/data/natura-13	13.06.22	01.04.22	13.06.22
SAC	10.03.21	c20201214 offshoreMPA_WG84 SAC-GB-OSGB-20191031 SAC_NI_TM65-20191031	JNCC	JNCC https://hub.jncc.gov.uk/assets/52b4e00d-798e-4fbe-a6ca-2c5735ddf049 https://hub.jncc.gov.uk/assets/52b4e00d-798e-4fbe-a6ca-2c5735ddf049	09.02.21	14.12.20 31.10.19 31.10.19	20.06.22
SPA	24.11.22	GB_SPA_OSGB36_20210209 Special protection areas BNG	JNCC DAERA	http://jncc.defra.gov.uk/protectedsites/SACselection/gis_data/terms_conditions.asp https://www.daera-ni.gov.uk/publications/special-protection-areas-digital-datasets	24.11.22 09.02.21	30.09.22 23.01.20	N/A 20.06.22

Data	Data Created	Raw Source File Name	Source Data Owner	Source	Downloaded Data	Data Date	Data Checked if older than 6 months
Ramsar	This excludes UK22002, which exists in the Ramsar table but not the shapefile. An approximation of this site has been included in the interim until a shapefile is available	UK-RAMSAR-BNG-20210308	JNCC	http://archive.jncc.gov.uk/default.aspx?page=2392	20.06.22	08.03.21	20.06.22
Non-UK Natura 2000	extracted subset 20/06/22	Natura2000_end2021_Shapefile.zip	EEA	https://www.eea.europa.eu/data-and-maps/data/natura-13/natura-2000-spatial-data/natura-2000-shapefile-1	13.06.22	01.04.22	13.06.22

Appendix B: Offshore Ornithology Screening Results (Step 1 and Conclusions of Step 2)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9003091	Ailsa Craig	Breeding seabird in the breeding season	A016	Gannet	Array Cable	No LSE	Site-specific foraging range data – Wakefield *et al.* (2013)
UK9002381	Auskerry	Breeding seabird in the breeding season	A014	Storm petrel	Array Cable	No LSE	Foraging range extending over land Limited abundance at Project site
UK9002491	Buchan Ness to Collieston Coast	Breeding seabird in the breeding season	A199	Common guillemot	Array Cable	LSE	-
UK9002491	Buchan Ness to Collieston Coast	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002491	Buchan Ness to Collieston Coast	Breeding seabird in the breeding season	A184	Herring gull	Array Cable	LSE	-
UK9002491	Buchan Ness to Collieston Coast	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002491	Buchan Ness to Collieston Coast	Breeding seabird in the breeding season	A018	Shag	Array Cable	No LSE	Limited abundance at Project site
UK9002431	Calf of Eday	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002431	Calf of Eday	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001431	Canna and Sanday	Breeding seabird in the breeding season	A188	Kittiwake	Cable	No LSE	Foraging range extends over land
UK9001231	Cape Wrath	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9001231	Cape Wrath	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001231	Cape Wrath	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9020291	Copeland Islands	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Site-specific foraging range data (Dean *et al.*, 2012) Limited abundance at Project site
UK9002151	Copinsay	Breeding seabird in the breeding season	A199	Common guillemot	Array Cable	LSE	-
UK9002151	Copinsay	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002151	Copinsay	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9006031	Coquet Island	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9006031	Coquet Island	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9006031	Coquet Island	Breeding seabird in the breeding season	A183	Lesser black-backed gull	Array Cable	No LSE	Limited abundance at Project site
UK9006031	Coquet Island	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9001182	East Caithness Cliffs	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001182	East Caithness Cliffs	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9001182	East Caithness Cliffs	Breeding seabird in the breeding season	A200	Razorbill	Array Cable	LSE	-
UK9002091	Fair Isle	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002091	Fair Isle	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9002091	Fair Isle	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9002091	Fair Isle	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002091	Fair Isle	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9006021	Farne Islands	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9006021	Farne Islands	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002031	Fetlar	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002031	Fetlar	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9006101	Flamborough and Filey Coast	Breeding seabird in the breeding season	A016	Gannet	Array Cable	No LSE	Site-specific foraging range data – Wakefield *et al.* (2013)
UK9001021	Flannan Isles	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001021	Flannan Isles	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9004171	Forth Islands	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9004171	Forth Islands	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9004171	Forth Islands	Breeding seabird in the breeding season	A183	Lesser black-backed gull	Array Cable	No LSE	Limited abundance at Project site
UK9004171	Forth Islands	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002061	Foula	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002061	Foula	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9002061	Foula	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002061	Foula	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site
UK9002061	Foula	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002271	Fowlsheugh	Breeding seabird in the breeding season	A199	Common guillemot	Array Cable	LSE	-
UK9002271	Fowlsheugh	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002271	Fowlsheugh	Breeding seabird in the breeding season	A184	Herring gull	Array Cable	LSE	-
UK9002271	Fowlsheugh	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9002271	Fowlsheugh	Breeding seabird in the breeding season	A200	Razorbill	Array Cable	LSE	-
UK9013121	Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Site-specific foraging range data (Dean *et al.*, 2012) Limited abundance at Project site
UK9001241	Handa	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001241	Handa	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9001241	Handa	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002011	Hermaness, Saxa Vord and Valla Field	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002011	Hermaness, Saxa Vord and Valla Field	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9002011	Hermaness, Saxa Vord and Valla Field	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9002141	Hoy	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002141	Hoy	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9002141	Hoy	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002141	Hoy	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9020328	Irish Sea Front	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Limited abundance at Project site
UK9020288	Isles of Scilly	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	No LSE	Foraging range extends over land
UK9020288	Isles of Scilly	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Limited abundance at Project site
UK9002211	Loch of Strathbeg	Breeding seabird in the breeding season	A191	Sandwich tern	Array Cable	LSE	-
UK13041	Loch of Strathbeg	Terrestrial bird	A038	Whooper swan	Cable	No LSE	No impact pathway with offshore works
UK13041	Loch of Strathbeg	Terrestrial bird	A040	Pink-footed goose	Cable	No LSE	No impact pathway with offshore works (considered for onshore impacts)
UK13041	Loch of Strathbeg	Terrestrial bird	A043	Greylag goose	Cable	No LSE	No impact pathway with offshore works (considered for onshore impacts)
UK13041	Loch of Strathbeg	Terrestrial bird	A045	Barnacle goose	Cable	No LSE	No impact pathway with offshore works (considered for onshore impacts)
UK13041	Loch of Strathbeg	Terrestrial bird	A068	Smew	Cable	No LSE	No impact pathway with offshore works
UK13041	Loch of Strathbeg	Terrestrial bird	A151	Ruff	Cable	No LSE	No impact pathway with offshore works
UK13041	Loch of Strathbeg	Terrestrial bird	A164	Greenshank	Cable	No LSE	No impact pathway with offshore works

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9002211	Loch of Strathbeg	Terrestrial bird	A038	Whooper swan	Cable	No LSE	No impact pathway with offshore works
UK9002211	Loch of Strathbeg	Terrestrial bird	A040	Pink-footed goose	Cable	No LSE	No impact pathway with offshore works (considered for onshore impacts)
UK9002211	Loch of Strathbeg	Terrestrial bird	A043	Greylag goose	Cable	No LSE	No impact pathway with offshore works
UK9002211	Loch of Strathbeg	Terrestrial bird	A045	Barnacle goose	Cable	No LSE	No impact pathway with offshore works
UK9002211	Loch of Strathbeg	Terrestrial bird	A052	Teal	Cable	No LSE	No impact pathway with offshore works
UK9002211	Loch of Strathbeg	Terrestrial bird	A067	Goldeneye	Cable	No LSE	No impact pathway with offshore works
UK9002121	Marwick Head	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001121	Mingulay and Berneray	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002361	Mousa	Breeding seabird in the breeding season	A014	Storm petrel	Array Cable	No LSE	Limited abundance at Project site
UK9001181	North Caithness Cliffs	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001181	North Caithness Cliffs	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001181	North Caithness Cliffs	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9001181	North Caithness Cliffs	Breeding seabird in the breeding season	A200	Razorbill	Cable	LSE	-
UK9001011	North Rona and Sula Sgeir	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001011	North Rona and Sula Sgeir	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9001011	North Rona and Sula Sgeir	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001011	North Rona and Sula Sgeir	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site
UK9001011	North Rona and Sula Sgeir	Breeding seabird in the breeding season	A014	Storm petrel	Array Cable	No LSE	Limited abundance at Project site
UK9020325	Northumberland Marine	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9020325	Northumberland Marine	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9020325	Northumberland Marine	Breeding seabird in the breeding season	A183	Lesser black-backed gull	Array Cable	No LSE	Limited abundance at Project site
UK9020325	Northumberland Marine	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002081	Noss	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002081	Noss	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9002081	Noss	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9002081	Noss	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002081	Noss	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9020316	Outer Firth of Forth and St Andrews Bay Complex	Breeding seabird in the breeding season	A016	Gannet	Array Cable	LSE	-
UK9020316	Outer Firth of Forth and St Andrews Bay Complex	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9020316	Outer Firth of Forth and St Andrews Bay Complex	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Limited abundance at Project site
UK9020316	Outer Firth of Forth and St Andrews Bay Complex	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002021	Ramna Stacks and Gruney	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site
UK9020011	Rathlin Island	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002041	Ronas Hill - North Roe and Tingon	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9002371	Rousay	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002371	Rousay	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001341	Rum	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	No LSE	Foraging range extends over land
UK9001341	Rum	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Site-specific foraging range data (Dean *et al.*, 2012)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							Limited abundance at Project site
UK9020331	Seas off Foula	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9020331	Seas off Foula	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9020331	Seas off Foula	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9020332	Seas off St Kilda	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9020332	Seas off St Kilda	Breeding seabird in the breeding season	A016	Gannet	Array Cable	No LSE	Site-specific foraging range data – Wakefield *et al.* (2013)
UK9014051	Skomer, Skokholm and the Seas off Pembrokeshire	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Site-specific foraging range data (Dean *et al.*, 2012) Limited abundance at Project site
UK9004271	St Abb`s Head to Fast Castle	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001031	St Kilda	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001031	St Kilda	Breeding seabird in the breeding season	A016	Gannet	Array Cable	No LSE	Site-specific foraging range data – Wakefield *et al.* (2013)
UK9001031	St Kilda	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site
UK9001031	St Kilda	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9001031	St Kilda	Breeding seabird in the breeding season	A013	Manx shearwater	Array Cable	No LSE	Limited abundance at Project site
UK9002181	Sule Skerry and Sule Stack	Breeding seabird in the breeding season	A016	Gannet	Array Cable	No LSE	Site-specific foraging range data – Wakefield *et al.* (2013)
UK9002181	Sule Skerry and Sule Stack	Breeding seabird in the breeding season	A015	Leach's petrel	Array Cable	No LSE	Limited abundance at Project site
UK9002181	Sule Skerry and Sule Stack	Breeding seabird in the breeding season	A204	Puffin	Array Cable	LSE	-
UK9002181	Sule Skerry and Sule Stack	Breeding seabird in the breeding season	A014	Storm petrel	Array Cable	No LSE	Limited abundance at Project site
UK9002511	Sumburgh Head	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002511	Sumburgh Head	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9001041	The Shiant Isles	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9001041	The Shiant Isles	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	No LSE	Foraging range extends over land
UK9003041	Treshnish Isles	Breeding seabird in the breeding season	A014	Storm petrel	Array Cable	No LSE	Foraging range extends over land Limited abundance at Project site
UK9002471	Troup, Pennan and Lion`s Heads	Breeding seabird in the breeding season	A199	Common guillemot	Array Cable	LSE	-
UK9002471	Troup, Pennan and Lion`s Heads	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK9002471	Troup, Pennan and Lion`s Heads	Breeding seabird in the breeding season	A184	Herring gull	Array Cable	LSE	-
UK9002471	Troup, Pennan and Lion`s Heads	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002471	Troup, Pennan and Lion`s Heads	Breeding seabird in the breeding season	A200	Razorbill	Array Cable	LSE	-
UK9002101	West Westray	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK9002101	West Westray	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	Breeding seabird in the breeding season	A191	Sandwich tern	Array Cable	No LSE	Site-specific foraging range data – Wilson *et al.* (2014)
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	Non-breeding seabird	A063	Eider	Cable	LSE	-
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	Terrestrial bird	A142	Lapwing	Cable	No LSE	No impact pathway with offshore works
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	Breeding seabird in the breeding season	A195	Little tern	Cable	LSE	-
UK9002221	Ythan Estuary, Sands of Forvie and Meikle Loch	Terrestrial bird	A040	Pink-footed goose	Cable	No LSE	No impact pathway with offshore works (considered for onshore impacts)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A007	Slavonian grebe	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A009	Fulmar	-	No LSE	Limited if any impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A013	Manx shearwater	-	No LSE	Limited if any impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Migratory seabird	A014	Storm petrel	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory seabird	A015	Leach's Petrel	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A016	Gannet	-	No LSE	Limited if any impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A027	Great white egret	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A038	Whooper swan	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A039	Taiga bean goose	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A040	Pink-footed goose	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A043	Greylag goose	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A045	Barnacle goose	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A048	Shelduck	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A050	Wigeon	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A052	Teal	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A053	Mallard	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A054	Pintail	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A056	Shoveler	-	No LSE	Limited if any impact expected, conclusion

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A059	Pochard	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A061	Tufted duck	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A062	Scaup	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A067	Goldeneye	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A069	Red-breasted merganser	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A070	Goosander	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A082	Hen harrier	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A098	Merlin	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A099	Hobby	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A113	Quail	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A118	Water rail	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A119	Spotted crake	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A130	Oystercatcher	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A137	Ringed plover	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A139	Dotterel	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A140	Golden plover	-	No LSE	Limited if any impact expected, conclusion

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A141	Grey plover	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A142	Lapwing	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A143	Knot	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A144	Sanderling	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A145	Little stint	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A148	Purple sandpiper	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A151	Ruff	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A153	Snipe	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A157	Bar-tailed godwit	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A158	Whimbrel	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A160	Curlew	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A162	Redshank	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A164	Greenshank	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A165	Green sandpiper	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A168	Common sandpiper	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A169	Turnstone	-	No LSE	Limited if any impact expected, conclusion

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A175	Great skua	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Migratory seabird	A175	Great skua	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A183	Lesser black-backed gull	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A184	Herring gull	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A187	Great black-backed gull	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A188	Kittiwake	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A199	Common Guillemot	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A200	Razorbill	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Breeding seabird in the non-breeding season	A204	Puffin	-	No LSE	Impact expected – excludes sites for which LSE has been identified in the breeding season
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A222	Short-eared owl	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A275	Whinchat	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A277	Wheatear	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A282	Ring ouzel	-	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A295	Sedge warbler	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A297	Reed warbler	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A314	Wood warbler	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A466	Dunlin	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A616	Black-tailed godwit	Array	No LSE	Limited if any impact expected, conclusion

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
							consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A672	Dunlin	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
ALL	All sites to be carried to stage 2 screening	Migratory waterbird	A674	Light-bellied brent goose	Array	No LSE	Limited if any impact expected, conclusion consistent with that in WWT Consulting and MacArthur Green (2014)
UK11049	Northumbria Coast	Breeding seabird in the breeding season	A188	Kittiwake	Array Cable	LSE	-
UK12018	Outer Ards Ramsar Site	Breeding seabird in the breeding season	A013	Manx shearwater	-	No LSE	Limited abundance at Project site Species does not exist at Ramsar
UK13033	Loch Leven	Breeding seabird in the breeding season	A183	Lesser black-backed gull	-	No LSE	Limited abundance at Project site
UK13041	Loch of Strathbeg	Breeding seabird in the breeding season	A191	Sandwich tern	Array Cable	LSE	-
UK13054	Ronas Hill - North Roe and Tingon	Breeding seabird in the breeding season	A009	Fulmar	Array Cable	LSE	-
UK13054	Ronas Hill - North Roe and Tingon	Breeding seabird in the breeding season	A175	Great skua	Array Cable	No LSE	Limited abundance at Project site

Site code	Site Name	Feature group	Feature code	Common name	Project component	Conclusion	Reasoning
UK13061	Ythan Estuary and Meikle Loch	Breeding seabird in the breeding season	A063	Eider	Cable	LSE	-
UK13061	Ythan Estuary and Meikle Loch	Breeding seabird in the breeding season	A191	Sandwich tern	Cable	LSE	-
UK13061	Ythan Estuary and Meikle Loch	Breeding seabird in the breeding season	A193	Common tern	Cable	LSE	-