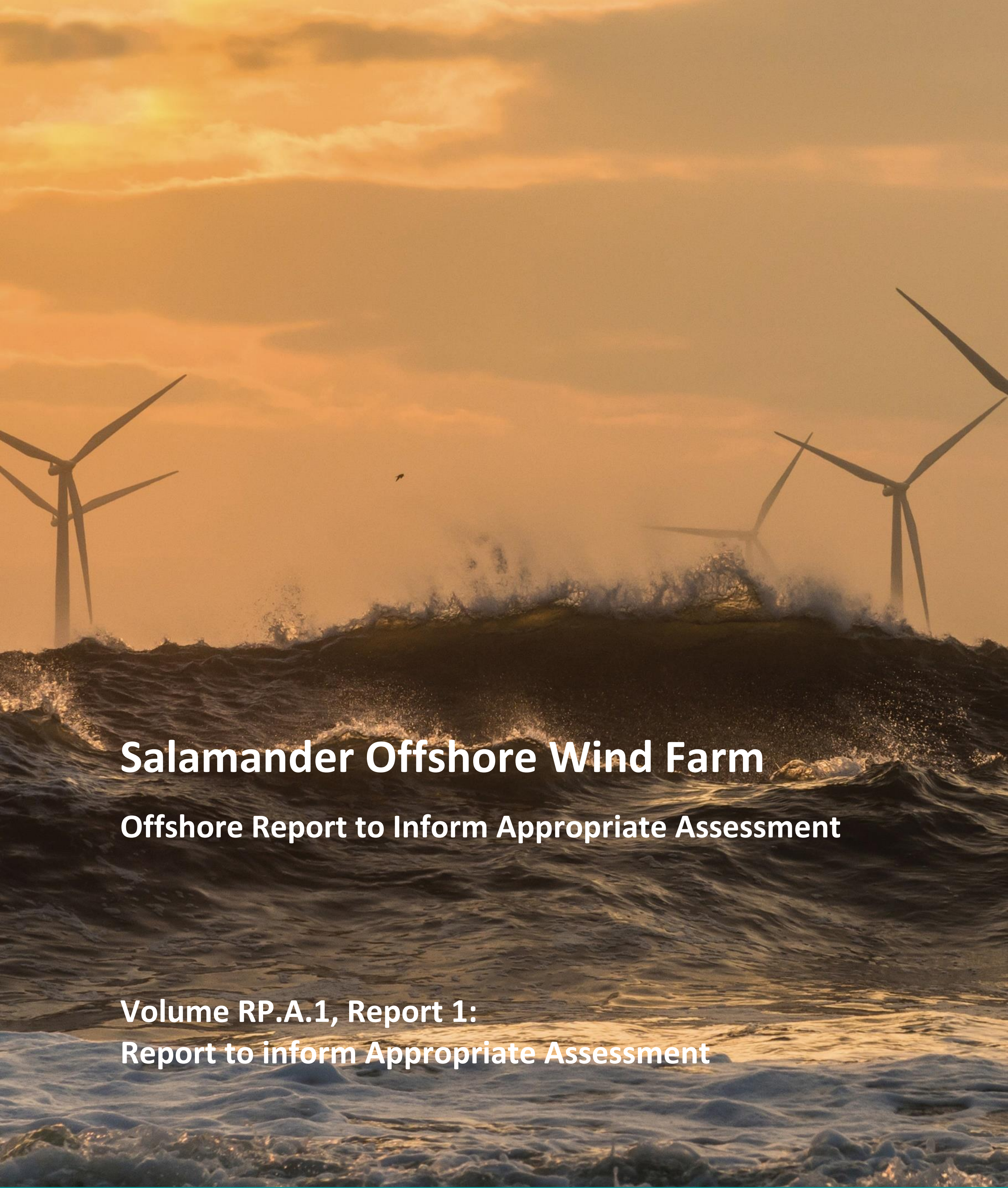

Salamander Offshore Wind Farm

Offshore Report to Inform Appropriate Assessment

Volume RP.A.1, Report 1:
Report to inform Appropriate Assessment

SALAMANDER

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Simply Blue Group

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Glossary

Term	Definition
Applicant	Salamander Wind Project Company Limited (formerly called Simply Blue Energy (Scotland) Limited), a joint venture between Ørsted, Simply Blue Group and Subsea7.
Application	The consents and licences being sought by the Applicant for the Offshore Development of the Salamander Project. As a minimum these include: A Section 36 Consent application under the Electricity Act 1989 for the wind farm generating station; and Marine Licence applications under the Marine (Scotland) Act 2010 and Marine and Coastal Access Act 2009.
Competent Authority	A competent authority is the authority with the power or duty to determine whether or not a proposal can proceed. A competent authority may include any Minister, government department, public or statutory undertaker, public body of any description, or person holding a public office.
Cumulative effects	As applied in the Environmental Impact Assessment Report (EIAR), the combined effect of the Salamander Project with the effects from a number of different projects, on the same single receptor/resource.
De minimis	That which is regarded as so insignificant as to be unworthy of attention with a defined limit or threshold based on this. This term should be interpreted in context.
Derogations	Term used in HRA to apply to the Stages post Appropriate Assessment (if required). Includes consideration of alternatives, IROPI and the requirement for compensation.
Design Envelope	A description of the range of possible elements that make up the Salamander Project design options under consideration, as set out in detail in the project description. This envelope is used to define Salamander Project for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known.
Development Area	The Development Area (Offshore) and Development Area (Onshore) combined.
Distributional Response	Defined by NatureScot (NatureScot (2023h). The two key distributional responses assessed in relation to offshore wind farms are displacement and barrier effects.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or

Term	Definition
	sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which the likely significant effects of certain projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Environmental Impact Assessment (Scotland) Regulations (2017).
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations.
European Sites	The term 'European site' is used to refer to what were previously known as 'Natura' sites. This recognises that Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) protect species and habitats shared across Europe and were originally designated under European legislation.
Export Cable Corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Offshore Array Area to the Onshore Substation, within which the export cables will be located.
Habitats Regulations Appraisal (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites (when these are also an SPA or SAC). The process consists of a multi stage assessment which incorporates screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of over-riding public interest (IROPI) and compensatory measures.
Impact	An impact is considered to be the change to the baseline as a result of an activity or event related to the Salamander Project. Impacts can be both adverse or beneficial impacts on the environment and be either temporary or permanent.
In-combination	In-combination is used to refer to the effects of the Salamander Project on a European Site in-combination with other relevant plans and projects with the potential to contribute to a likely significant effect on or adverse effect on the integrity of that European Site.
Inter-array Cables	Offshore cables which link the wind turbines to each other and to the Offshore Export Cable(s).
Long-term	The term to refers to changes that occur over multiple years and over multiple breeding cycles.
Landfall	The generic term applied to the entire landfall area between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction

Term	Definition
	works, including the offshore and onshore Export Cable Corridor, intertidal working area and landfall compound, where the offshore cables come ashore north of Peterhead.
Medium-term	The term to refers to changes that are limited to at most a few years or breeding cycles.
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 Salamander 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 Applicant is seeking consent.
Offshore Development Area	The total area comprising the Offshore Array Area and the Offshore Export Cable Corridor.
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 Mean High Water Springs (MHWS).
Offshore Report to Inform Appropriate Assessment	Report to Inform the Appropriate Assessment of the offshore aspects of the Salamander Project being all works from Mean High Water Spring seawards.
Onshore Development	The entire Onshore Development across all Project phases from development to decommissioning, for which the Applicant is seeking consent.
Onshore Report to Inform Appropriate Assessment	Report to Inform the Appropriate Assessment of the onshore aspects of the Salamander Project being all works from Mean Low Water Spring landwards.
Receptor	Any physical, biological or anthropogenic element of the environment that may be affected or impacted by the Salamander Project. For the purposes of the current report, such receptors are designated features of an SAC, SPA or Ramsar (when these are also an SPA or SAC) (or supporting habitats or species of those) and are addressed in groups, specifically benthic ecology, marine mammals, migratory fish (including freshwater pearl mussel) and ornithology
Report to Inform Appropriate Assessment	Report prepared to provide a Competent Authority with the information necessary to undertake an Appropriate Assessment (AA).

Term	Definition
Salamander Project	The proposed Salamander Offshore Wind Farm. The term covers all elements of both the offshore and onshore aspects of the project.
Scoping	An early part of the EIA process by which the key potential significant impacts of the Salamander Project are identified, and methodologies identified for how these should be assessed. This process gives the relevant authorities and key consultees opportunity to comment and define the scope and level of detail to be provided as part of the EIAR – which can also then be tailored through the consultation process.
ScotWind	Crown Estate Scotland offshore wind leasing programme.
Screening	The HRA stage to determine if the Salamander Project is likely to have a significant effect on a European site on its own or in combination with other proposals, and if it is directly connected with or necessary to the management of the site.
Sound Exposure Level (SEL)	The decibel level of the time integral (summation) of the squared pressure over the duration of a sound event; units of dB re 1 µPa2/s.
Sound Pressure Level (SPL)	A means of characterising the amplitude of a sound. There are several ways sound pressure can be measured. The most common of these are the root-mean-square (RMS) pressure, the peak pressure, and the peak-to-peak pressure.
Wind Turbine Generator	All the components of a wind turbine, including the tower, nacelle, and rotor.

Acronyms

Term	Definition
AA	Appropriate Assessment
AEOI	Adverse Effect on Integrity
BDMPS	Biologically Defined Minimum Population Scales
CEF	Cumulative Effects Framework
CGR	Counterfactual of Growth Rate
CPS	Counterfactual of Population Size
DAS	Digital Aerial Surveys
dB re 1 µPa^2/s	Decibels referencing 1 $Micropascal^2$ per Second
ECC	Export Cable Corridor
EDR	Effective Deterrent Radius
EEA	European Economic Area
EEZ	Economic Exclusive Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMF	Electro-Magnetic Fields
FWPM	Freshwater pearl mussel
HRA	Habitats Regulations Appraisal
Hz	Hertz
INTOG	Innovation and Targeted Oil and Gas
iPCoD	Interim Population Consequences of Disturbance Model
IROPI	Imperative reasons of over-riding public interest

Term	Definition
JNCC	Joint Nature Conservation Committee
JV	Joint Venture
LSE	Likely Significant Effect
MBES	Multi Beam Echo Sounder
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMMP	Marine Mammal Mitigation Protocol
MU	Management Units
MW	Megawatts
NIEA	Northern Ireland Environment Agency
OAA	Offshore Array Area
O&M	Operation and Maintenance
OWF	Offshore Wind Farm
PTS	Permanent Threshold Shift
PVA	Population Viability Analysis
RIAA	Report to Inform Appropriate Assessment
RIS	Information Sheet on Ramsar Wetlands
RSPB Scotland	Royal Society for the Protection of Birds Scotland
SAC	Special Area of Conservation
SEL	Sound Exposure Level
SMP	Sectoral Marine Plan
SNCB	Statutory Nature Conservation Bodies
SNH	Scottish National Heritage (now known as NatureScot)

Term	Definition
SPA	Special Protection Area
SPL	Sound Pressure Level
SSS	Side Scan Sonar
SWPC	Salamander Wind Project Company Limited
TTS	Temporary Threshold Shift
UK	United Kingdom
USBL	Ultra-Short Baseline
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

1 Introduction

1.1 Background to the Salamander Project

1.1.1.1 The Applicant, Salamander Wind Project Company Limited (formerly called Simply Blue Energy (Scotland) Limited), a joint venture between Ørsted, Simply Blue Group and Subsea7. The Salamander Project will consist of the installation of a floating offshore wind farm (up to 100 megawatts (MW) capacity) approximately 35 kilometres (km) east of Peterhead. It will consist of both offshore and onshore infrastructure, including an offshore generating station (wind farm), export cables to landfall, and connection to the electricity transmission network. The Offshore Development is defined in **Volume ER.A.2, Chapter 4: Project Description**.

1.2 Purpose of the Offshore Report to Inform Appropriate Assessment

1.2.1.1 This Report, termed the Offshore Report to Inform Appropriate Assessment (Offshore RIAA), provides the information required by the Scottish Ministers, as Competent Authority, to undertake an Appropriate Assessment (AA) of the offshore aspects of the Salamander Project (i.e. for all works from Mean High Water Spring (MHWS) seawards).This Offshore RIAA draws on the Screening Report (SBES, 2023a), together with consultee feedback (**Table 1-2**), to provide the context for AA, to determine if the offshore aspects of the Salamander Project will have an adverse effect on integrity (AEOI) on any European site, either alone or in-combination. The assessment considers the construction, operation and maintenance, and decommissioning phases of the offshore aspects of the Salamander Project. Where there may be a need for the Competent Authority to progress past the AA stage, information is provided separately within the Derogation Case (**Volume RP.A.3, Report 1: HRA Derogation Case, Part 1-3**), and Compensation Roadmap (**Volume RP.A.3, Report 2: HRA Derogation Case, Compensation Plan Roadmap**) that accompanies the Offshore RIAA (**Volume RP.A.1, Report 2: Offshore Report to Inform Appropriate Assessment (RIAA)**).

1.2.1.2 This Offshore RIAA was authored by NIRAS Group (UK) Ltd (NIRAS).

1.3 The Whole Project Approach

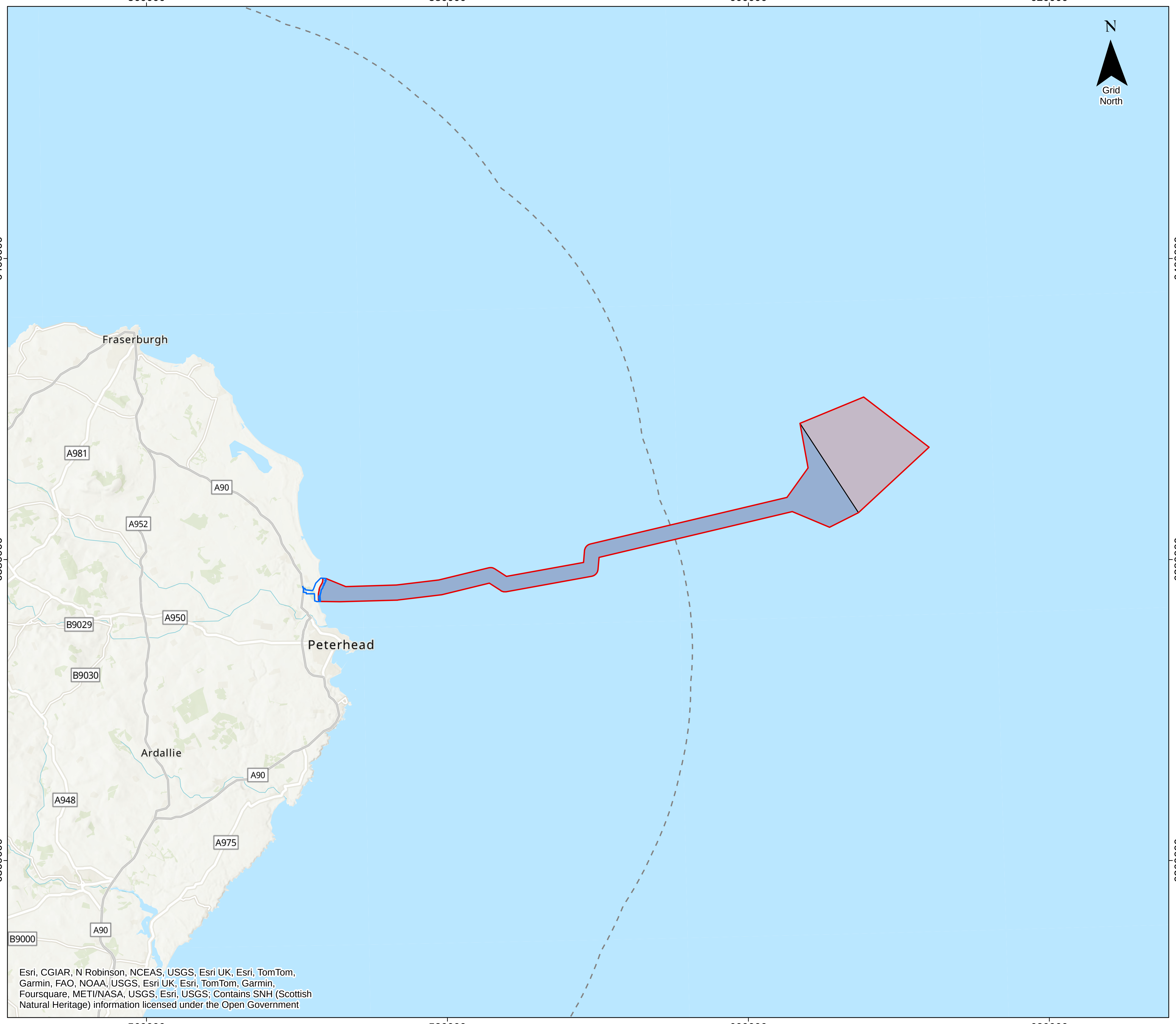
1.3.1.1 The Onshore RIAA, which will follow together with wider onshore Application documentation, will address the onshore aspects of the Salamander Project from Mean Low Water Springs (MLWS) landwards. The Onshore RIAA will draw on the Screening Report (SBES, 2023a), specifically in relation to sites and species that are located onshore.

1.3.1.2 To ensure the whole project is assessed, should the Offshore RIAA and Onshore RIAA undertake an assessment of the same designated site, that would be considered in each RIAA within the in-combination section. However, as no designated site was screened in for both onshore and offshore assessments, no such potential for a whole project in-combination effect has arisen.

1.3.1.3 This Offshore RIAA should be read alongside the relevant Salamander Project Environmental Impact Assessment Report (EIAR) chapters and Technical Annexes referenced in **Section 1.1**.

1.4 Project Location

1.4.1.1 The Offshore RIAA does not apply a Study Area in the way the EIAR has, the assessment focuses on designated sites and not specifically the immediate footprint of the Salamander Project. The location of the Salamander Project (Offshore Array Area, Offshore Export Cable Corridor (Offshore ECC) and Onshore Development (OD)) are shown in **Figure 1-1**.



Salamander

Figure 1-1

Location of the Salamander Project

Legend

- Offshore Development Area
- Offshore Array Area
- Offshore Export Cable Corridor
- Indicative Onshore Development Area
- 12 nm limit

Coordinate System: WGS 1984 UTM Zone 30N

Vertical Datum : MLLW

Scale @ A3 : 1:250,000

0 5 10 15 Kilometers

0 1 2 4 6 8 Nautical Miles

Rev	Description	Date
00	Final	23/01/2024
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Doc. Title : Location of the Salamander Project
Doc. No : 81400281_001
Created by : JOSW
Checked by : SAKZ
Approved by : SAKZ

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1.5 Legislation, Policy and Guidance

1.5.1.1 The preparation of the Offshore RIAA was informed by the following key policy, legislation, and guidance outlined in **Table 1-1**. Where species or habitat specific guidance has been used, these are referenced in the appropriate sections of the Offshore RIAA.

Table 1-1 Key policy, legislation and guidance relevant to the Offshore Report to Inform Appropriate Assessment

Relevant policy, legislation, and guidance
Policy
National Planning Framework 4 (Scottish Government, 2023a)
Scottish Government Policy 'Habitats Regulations Appraisal (HRA)' (undated, a)
Scotland's National Marine Plan (Scottish Government, 2015)
Scotland's Biodiversity: a route map to 2020 (undated, b)
Legislation
Marine and Coastal Access Act 2009
The Conservation (Natural Habitats, &c.) Regulations 1994
The Conservation of Habitats and Species Regulations 2017
The Conservation of Offshore Marine Habitats and Species Regulations 2017
Guidance
Scottish Government guidance on Marine licensing and consenting: Habitats Regulations Appraisal (2024)
NatureScot guidance on Habitats Regulations Appraisal (NatureScot, 2024).
NatureScot guidance on 'The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement' (2020a)
Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019). Guidance on the use of the Habitats Regulations Assessment.
Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications (2018).
Marine environment: unexploded ordnance clearance joint interim position statement (DEFRA et al. 2021)
Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall et al. 2019)
Scottish Marine Wildlife Watching Code (SNH 2017)

Relevant policy, legislation, and guidance
The protection of Marine European Protected Species from injury and disturbance: Guidance for Inshore Waters (July 2020 Version) (Marine Scotland 2020)
JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (seismic survey guidelines) (JNCC 2017)
JNCC guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives (JNCC 2010a)
Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC 2010b)
Marine environment: unexploded ordnance clearance joint interim position statement (DEFRA et al., 2021)
Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall et al., 2019)
NatureScot Marine Ornithology Guidance Notes to support Offshore Wind Applications (NatureScot, 2023a-k): • Guidance Note 1: Guidance to support Offshore Wind Applications: Marine Ornithology – Overview (NatureScot, 2023a) • Guidance Note 2: Guidance to support Offshore Wind Applications: Advice for Marine Ornithology Baseline Characterisation Surveys and Reporting (NatureScot, 2023b) • Guidance Note 3: Guidance to support Offshore Wind applications: Marine Birds – Identifying theoretical connectivity with breeding site Special Protection Areas using breeding season foraging ranges (NatureScot, 2023c) • Guidance Note 4: Guidance to Support Offshore Wind Applications: Ornithology – Determining Connectivity of Marine Birds with Marine Special Protection Areas and Breeding Seabirds from Colony SPAs in the Non Breeding Season (NatureScot, 2023d) • Guidance Note 5: Guidance to support Offshore Wind Applications: Recommendations for marine bird population estimates (NatureScot, 2023e) • Guidance Note 6: Guidance to support Offshore Wind Applications – Marine Ornithology Impact Pathways for Offshore Wind Developments (NatureScot, 2023f) • Guidance Note 7: Guidance to support Offshore Wind Applications: Marine Ornithology – Advice for assessing collision risk of marine birds (NatureScot, 2023g) • Guidance Note 8: Guidance to support Offshore Wind applications: Marine Ornithology Advice for assessing the distributional responses, displacement and barrier effects of Marine birds (NatureScot, 2023h) • Guidance Note 9: Guidance to support Offshore Wind applications: Marine Ornithology Advice for Seasonal Definitions for Birds in the Scottish Marine Environment (NatureScot, 2023i) • Guidance Note 10: Guidance to support Offshore Wind applications: Marine Ornithology Advice for apportioning impacts to breeding colonies (NatureScot, 2023j) • Guidance Note 11: Guidance to support Offshore Wind Applications: Marine Ornithology – Recommendations for Seabird Population Viability Analysis (PVA) (NatureScot, 2023k)
Incorporating data uncertainty when estimating potential vulnerability of Scottish seabirds to marine renewable energy developments (Wade et al., 2016)
Assessing vulnerability of marine bird populations to offshore wind farms (Furness et al., 2013)
Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index (Garthe and Hüppop, 2004)

Relevant policy, legislation, and guidance
Joint Statutory Nature Conservation Bodies (SNCB) Interim Displacement Advice Note: Advice on how to present assessment information on the extent and potential consequences of seabird displacement from Offshore Wind Farm developments (SNCB, 2022)
Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines (Johnston et al., 2014)
Using a Collision Risk Model to Assess Bird Collision Risks for Offshore Wind Farms (Band, 2012)
A Stochastic Collision Risk Model for Seabirds in Flight (McGregor et al., 2018)
Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species) (Wright et al., 2012)
WWT Consulting and MacArthur Green (2014). Seabird sensitivity mapping for English territorial waters. Natural England.
NatureScot (2018). Interim Guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs.

1.6 Legislative Background

1.6.1.1 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 Special Areas of Conservation (SACs), and those designated under the Birds Directive are Special Protection Areas (SPAs).

1.6.1.2 In Scotland these directives are transposed into domestic law through the Conservation (Natural Habitats &c.) Regulations 1994 (the 'Habitats Regulations'), which cover terrestrial areas and territorial waters out to 12 nm. Waters beyond 12 nm, 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'). In addition, the Conservation of Habitats and Species Regulations 2017 are relevant to the application for Section 36 consent. These regulations are collectively referred to here as the 'Habitats Regulations'.

1.6.1.3 The Conservation 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[1], 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 Sites of Special Scientific Interest (SSSI) features, these receive protection under the SSSI regime".

[1] https://www.gov.scot/publications/implementation-of-scottish-government-policy-on-protecting-ramsar-sites/

1.6.1.4 Post-Brexit, the 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' and 'Special Protection Area' all being retained[2].

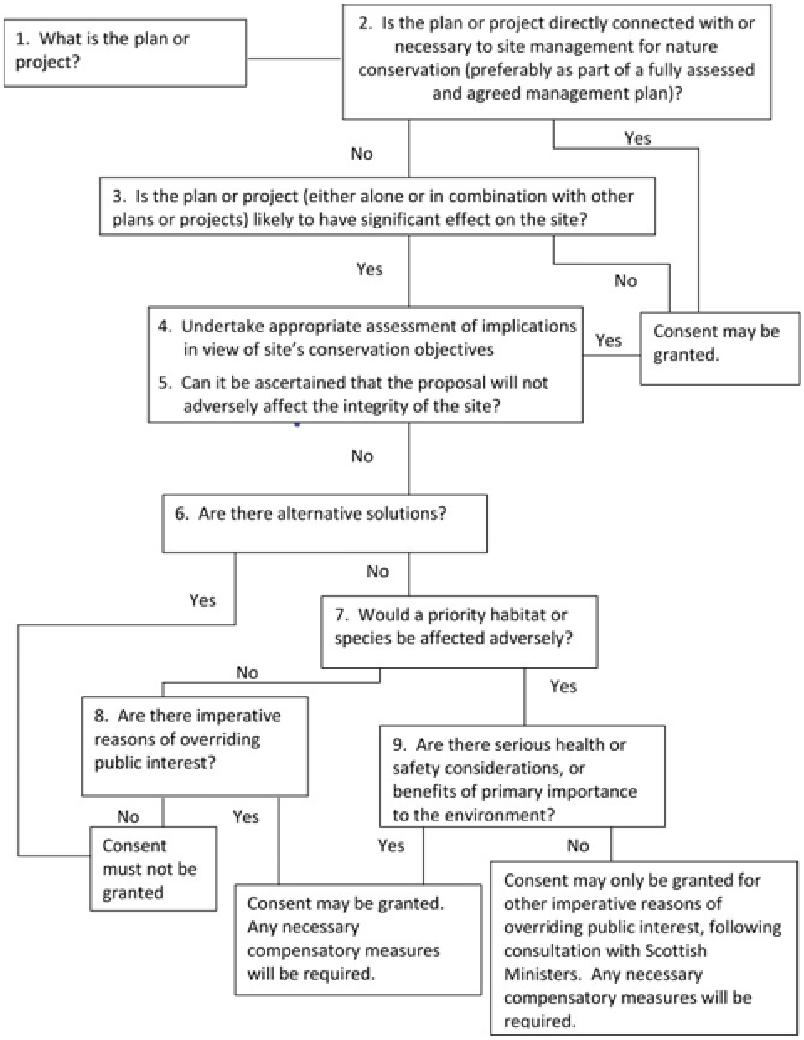
1.6.1.5 In cases where no adverse effect on integrity (AEOI) can be demonstrated, Scottish Ministers as the Competent Authority would previously have been required to seek the opinion of the European Commission on whether the plan or project should be carried out for imperative reasons of overriding public interest (IROPI). 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.

1.7 The Habitats Regulations Appraisal Process

1.7.1.1 **Figure 1-2** summarises the steps to take when determining if a plan or project could affect a European site. For the Salamander Project, the answer to stage 1 is an offshore wind farm project being progressed through the Innovation and Targeted Oil & Gas (INTOG) leasing round. With respect to stage 2, as the Salamander Project is not directly connected with or necessary to site management for nature conservation, the Salamander Project is expected to progress to stage 3. At this point, the HRA process is typically viewed as occurring across a number of further stages, with these outlined in **Figure 1-2** and the text following.

[2] https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/documents/

Figure 1-2 How to consider plans and projects that could affect European sites (Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)) (from NatureScot[3])



1.7.1.2 The key **stages** are summarised as follows:

- Stage 3 Screening: Determination of potential for likely significant effect (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.
- Stages 4 and 5 Appropriate Assessment and determination of adverse effect: 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 adverse effect on the integrity (AEOI) of any European Site. Consideration is here given to any planned mitigation measures within the proposal.

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

- Stage 6 – Examination of Alternative Solutions: If the AA cannot rule out potential AEOI, then alternative options for the plan or project must be considered.
- Stage 7 – presence/absence of a priority habitat or species: To determine if the assessment includes a priority habitat or species (if the answer is yes an additional stage, Stage 9, is required).
- Stage 8 - Assessment of IROPI (Imperative Reasons of Overriding Public Interest): Where no alternative solutions are determined to be possible, assessment will be undertaken to determine whether there is an overriding public interest for the proposal to be consented.

1.7.1.3 The need for and content of each stage subsequent to screening will be informed by the previous, with progression post Stage 3 informed by each subsequent stage. Together, the stages identified above are referred to as Habitats Regulations Appraisal (HRA).

1.7.1.4 This Offshore RIAA provides an update to Stage 3 Screening together with the information required to inform Stages 4 and 5 Appropriate Assessment.

1.8 Consultation

1.8.1.1 Consultation is a key part of the application process. It has played an important part in ensuring that the approach to Stage 3 Screening and Stages 4 and 5 Assessment is appropriate to the Salamander Project as well as meeting the requirements of the regulators and their advisors.

1.8.1.2 An overview of the Salamander Project consultation process is outlined in **Volume ER.A.2, Chapter 5: Stakeholder Consultation**. Consultation regarding Stage 3 Screening was included in the scoping workshops completed in November 2022, as part of the relevant receptor specific topics. Included within the information provided to consultees for these scoping workshops was technical information to inform the ornithological assessments, with the Screening Report presenting and addressing comments received during the workshops (with that information not repeated here). The subsequent Screening Report (NIRAS, 2023), together with the Scoping Report (SBES, 2023b), were issued for consultation on 22 February 2023 (a full list of consultees is included in **Volume ER.A.2, Chapter 5: Stakeholder Consultation**), with consultee responses received following that.

1.8.1.3 The issues raised during consultation specific to the Offshore RIAA, including comments on the Screening Report, are outlined in **Table 1-2**, including consideration of where the issues are addressed within the Offshore RIAA (comments relevant to the Onshore RIAA are addressed in (**Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment**)). Comments raised at the Scoping Workshop are provided within the Salamander Project HRA Screening Report (SBESa, 2023) and are not repeated here.

Table 1-2 Consultation responses specific to the Offshore Report to Inform Appropriate Assessment

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
Dee District Salmon Fishery Board	21 June 2023; comments on EIA Scoping Report	Designations & Conservation Status As a statutory body charged with the protection of Atlantic salmon and sea trout stocks within its district, the Dee DSFB has a duty to ensure that there are no significant adverse impacts upon the populations of these species. The Dee has been designated as a Special Area of Conservation under the EC Habitats Directive 92/43 EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna for Atlantic salmon (the principal species for which it receives this designation). The Dee District also supports populations of trout, eels and brook, river and sea lampreys. Sea trout, common to all the rivers within the Dee District, are a priority species under the United Kingdom's Biodiversity Action Plan (UKBAP). All lamprey species are protected under the EC Habitats Directive whilst river and sea lampreys are additionally protected under the UKBAP priority list. Eels are a UKBAP priority species, critically endangered under the IUCN red list and protected under CITES.	Noted and as confirmed in email from NatureScot dated 21 September 2023 we note that NatureScot advice is 'we have advised that as there is currently limited knowledge of the distribution and behaviour of diadromous fish species in the marine environment, including connectivity to individual SACs, and as such impacts should be assessed through Environmental Impact Assessment (EIA) only and not through HRA. The exception to this would be where there is clear connectivity and potential route to impact between a development and an individual SAC due to for example close proximity to infrastructure such as the Export Cable Corridor or landfall. As the River Dee SAC is approximately 50 km from the proposed landfall and export cable corridor we advise that this site can also be screened out from further HRA assessment' Therefore all migratory fish and freshwater pearl mussel (FWPM) are screened out from assessment.
		We note that the location of the proposed site, cable corridor and landfall [comprise of the Offshore Array Area, the Offshore ECC and landfall] are out with the Dee District Salmon Fishery Board district and that the Dee SAC 48 km south-west of the Offshore ECC and 70 km from the Offshore Array Area. Due to the diadromous nature of Atlantic salmon and sea trout, are pleased to see that these migratory fish and their complicated migratory pathways have	Migratory fish considered through screening based on a large range (200 km), with advice from NatureScot applied here in the Offshore RIAA. Specifically, that salmon outside SAC boundaries should be assessed in the EIAR and not the RIAA. Following written advice received from NatureScot (as confirmed in

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
		been considered and agree with potential impacts 'scoped in' to the assessment.	the Marine Directorate response detailed below) all salmon SACs screened out from further assessment alone and in-combination.
DAERA Marine and Fisheries Division	21 June 2023; comments on EIA Scoping Report	Marine Conservation Advice Response DAERA Marine and Fisheries Division is content that the proposal is unlikely to have a significant effect on marine SACs within the Northern Ireland inshore region due to distance from the wind farm site. With regard to SPA features, NIEA is content that the Salamander Offshore Wind Farm HRA Stage 1: Screening report has screened in breeding Fulmar at Rathlin Island SPA (Table 6.4: Sites and Features where potential for LSE exists for Offshore and Intertidal Ornithology) and that breeding Manx Shearwater at Copeland Islands SPA was removed from further consideration due to their findings of: 1. no potential for LSE for any SPAs with which potential connectivity was identified for Manx shearwater at all SPAs and Ramsar sites for all aspects of the Offshore Array Area and, 2. no connectivity with the Offshore Array Area and therefore no LSE for Manx Shearwater at breeding colonies, including at the Copelands Islands SPA, after considering existing Manx Shearwater tracking data.	Noted
NatureScot	21 June 2023; comments on EIA Scoping Report	Wet storage could represent a significant impact pathway. Consideration of which including potential impacts on ornithology receptors needs to be addressed with the EIAR and forthcoming HRA. We would welcome further discussion on this as and when further project details are confirmed, noting the intention to seek a separate marine licence application for any requirements for wet storage outwith the array area.	Wet storage of the floating substructures (and integrated WTGs) prior to tow-out to the Offshore Array Area is considered to be outside the scope of this Offshore RIAA. This is due to the fact that at this stage of the Salamander Project it is not known which port(s) will be used for wet storage and therefore it is challenging to undertake a meaningful assessment of impacts related to wet storage. The intent is that the Salamander Project will utilise the services of a port(s) that offer wet storage sites, which will have appropriate consents (obtained by the port authority) for wet storage of floating substructures, fabrication

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			and assembly with the WTGs. To enable the availability of this option for the Salamander Project within the required timeframe, an owner of SWPC is an official member of the TS-FLOW UK-North Joint Industry Project (JIP) exploring the challenges of wet storage and identifying the opportunities and potentially suitable locations for these activities. This JIP is in collaboration with relevant ports and other floating offshore wind developers. Separate Marine Licences and associated impact assessments for wet storage areas outwith the Offshore Array Area or Offshore ECC will be applied for and undertaken as appropriate. (See **Volume ER.A.2, Chapter 4: Project Description**).
		Please also note the protection of Ramsar sites in Scotland[4] as detailed in Scottish Government policy.	Ramsar sites are included in screening and therefore the RIAA through the same screening and assessment methodology as SPAs.
		Habitats Regulations Appraisal (HRA) We welcome being consulted on the EIA Scoping Report and HRA Stage 1 Screening Report to enable us to consider and provide advice under each assessment process at the same time. We provide HRA advice for ornithology, marine mammals, benthic ecology and migratory fish in each of the relevant appendices (see below).	Noted
		We note that it is intended to use the Cumulative Effects Framework (CEF), currently being developed by MD-LOT, for the cumulative effects assessment for a number of receptors. However, our understanding is that the CEF currently only considers ornithology and marine	Noted. The CEF was unavailable at the time of drafting for the Salamander Project and therefore has not been applied to the

[4] https://www.gov.scot/publications/implementation-of-scottish-government-policy-on-protecting-ramsar-sites/

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		mammal interests.	assessments presented here.
		We recently concluded that the Berwick Bank application would have an adverse effect on site integrity (AEoSI) across multiple seabird species within The UK European Site Network, some of which overlap with the species and sites likely to require assessment for this application. Due to this conclusion and the unknown outcome of the Berwick Bank application at present, we anticipate that multiple PVA models should be run, with and without Berwick Bank.	Population Viability Analysis has been run using several scenarios, including with and without Berwick Bank, and for periods including 25 years, 35 years (the lease period), and 50 years. PVA methodology and results are presented in full in **Volume ER.A.4, Annex 12.4: Population Viability Analysis (PVA), Volume ER.A.4, Annex 12.9: Cumulative Assessment Population Viability Analysis (PVA)** and **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA).**
		Cumulative assessment should be further discussed with MD-LOT and NatureScot to ensure that both the worst case and realistic worst case are both taken forward into a cumulative assessment.	Noted. The in-combination assessment as presented in **Section 11** is presented with a number of scenarios (as informed by the defined parameters underpinning each assessment approach) including with and without Berwick Bank scenarios.
		The proposed approach to transboundary impacts is set out in Section 8.4.9. Further discussion with MD-LOT and NatureScot on the approach to transboundary assessment will be required following submission of the final ornithology baseline report, as the HRA Stage 1 Screening Report identifies connectivity and likely significant effect (LSE) with seabird populations that breed outside Scotland .	Transboundary effects are considered in **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology, Section 6.14**. Transboundary effects with relevance to the HRA are assessed here in **Section 12**, in line with the approach applied to all sites. Of note is the consultation responses provided in this table from DAERA Marine and Fisheries Division and Natural England.
		HRA Stage 1 Screening Report Overall the HRA Stage 1 Screening Report sets out the screening process in a logical order and the overall conclusions as to which sites should be retained for further consideration following the screening stage can mostly be supported on the basis of potential connectivity and generic impact pathways. However, we provide the following advice.	Noted. Please see **Table 1-1** for guidance documents.

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		We note that our marine ornithology guidance notes are not listed in Section 2.3 'Relevant Guidance'.	
		Impact pathways The HRA screening takes into consideration key impact pathways. However, impacts arising from wet storage have not been addressed in the HRA Stage 1 Screening Report and this will require further assessment, if wet storage is an integral part of the final application.	Wet storage does not form part of the application (see **Volume ER.A.2, Chapter 4: Project Description**).
		The Applicant has used the screening tool (built by Niras for NatureScot and JNCC) to develop the initial long list, which used the recommended mean maximum plus 1 S.D. foraging ranges from Woodward et al (2019) (with some exceptions to this with respect to gannets, guillemots and razorbills). The Applicant has biologically sense checked this by considering at-sea distances, with 5 SPAs and associated features screened out (see below), and we are content with this approach. Gannet at the Ailsa Craig SPA, fulmar at the Isles of Scilly SPA, Black-legged kittiwake (Rissa tridactyla) (hereafter referred to as 'kittiwake') at the Rum SPA and the Shiant Isles SPA, and European storm petrel at the Treshnish Isles SPA.	Noted.
		The Applicant has undertaken 24 months of DAS data collection, which includes the original Area of Search (AoS) and a 4km buffer. We are aware of the change in offshore array area, which is now smaller than the original AoS and we are content with this. However, the HRA Stage 1 Screening Report states that the results from baseline surveys are only available from March 2021 to February 2022. We do not agree that any species or sites should be scoped out based on one year of data collection. Therefore, until the second year of data has been made available, we cannot agree with the species scoped out in Section 6.4.2.3, namely: Lesser black-backed gull (Loch Leven Ramsar, Coquet Island SPA, Forth Islands SPA), European storm petrel (Auskerry SPA, Mousa SPA, North Rona and Sula Sgeir SPA, Sule Skerry and Sule	Noted. As per our email dated 20th October 2023, to confirm that none (or very small numbers) of these species were recorded during the year 1 or 2 DAS and therefore no change required to the screening conclusions. We note in the response to the above email by the NS email dated 17th November 2023 that 'although we are aware that DAS surveys have picked up petrels and shearwaters in low numbers, there are potential concerns around the detectability of these species in DAS. Therefore, we recommend there is some consideration of these species in the

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		Stack SPA, Treshnish Isles SPA), great skua (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 & Ramsar, St Kilda SPA), Leach's petrel (all SPAs for all aspects of the offshore array area), Manx shearwater (all SPAs and Ramsar sites for all aspects of the offshore array area) and shag (all SPAs for all aspects of the offshore array area).	assessments'. Petrels and shearwater remain screened out, with the consideration and reasoning provided in **Section 1.8.2**.
		Gannet have been screened out during the breeding season only from Ailsa Craig SPA, Flamborough and Filey Coast SPA, St Kilda SPA and Sule Skerry and Sule Stack SPA due to tracking evidence in Wakefield et al. (2013). This study shows the segregated nature of gannet foraging and also shows no connectivity between the offshore array area and these colonies. We agree that for Ailsa Craig SPA, Flamborough and Filey Coast SPA and St Kilda SPA this can be applied and these sites screened out. However, there is a data gap on gannet tracking in the north east and therefore we consider this should not yet be applied to Sule Skerry and Sule Stack SPA.	Noted. As per our email dated 20th October 2023, to confirm that breeding northern gannet (*Morus bassanus*) (hereafter referred to as 'gannet') from Sule Skerry and Sule Stack SPA are screened in. We note that no comment was made as regards this in the email from NatureScot dated 17th November 2023.
		Shag have been screened out for further assessment for offshore array areas. However, despite their relatively low displacement and collision, given the proximity to the site and the lack of any assessment with respect to wet storage or to the export cable corridor, we advise that there remains a potential for LSE.	Please see response on wet storage provided above. We can confirm that shag is screened in for the Buchan Ness to Collieston Coast SPA for the Offshore ECC during construction, O&M and decommissioning for Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination as highlighted in Table 6.4 of the Salamander Project HRA Screening Report (SBES, 2023a). We note that no comment was made as regards this in the email from NatureScot dated 17th November 2023.
		Sandwich tern at Loch of Strathbeg SPA and Ythan Estuary, Sands of Forvie and Meikle Loch SPA is within connectivity distance to the offshore export cable corridor. We acknowledge the tracking evidence cited, however, until the second year of survey has confirmed the	Confirmed that no sandwich tern detected in year 1 or year 2 of DAS and therefore no change to screening required for the array. In relation to the Offshore ECC, we can confirm that in Table 6.4 of the

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		absence of this species (or minimal numbers) we do not agree that they can be scoped out at this stage. Therefore, potential impacts within the export cable corridor during the construction phase will require further consideration with respect to Sandwich tern.	Salamander Project HRA Screening Report (SBES, 2023a) sandwich tern from the Ythan Estuary, Sands of Forvie and Meikle Loch SPA/Ramsar and the Loch of Strathbeg SPA/Ramsar is screened in during construction, O&M and decommissioning for toxic contamination. We note that no comment was made as regards this in the email from NatureScot dated 17th November 2023.
		The Applicant proposes to screen out Manx shearwater during the breeding season from Copeland Islands SPA, Rum SPA and Skomer, Skokholm and Seas off Pembrokeshire SPA based on tracking data from Dean et al. (2012), which shows these colonies forage in areas associated with the Irish Sea Front. They have considered the same is likely to apply to Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA. We accept this approach. Therefore, we agree the following can be screened out at this point: Copeland Islands SPA, Rum SPA, Skomer, Skokholm and Seas of Pembrokeshire SPA, Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA.	Noted
		Therefore, we agree the following can be screened out at this point: Northern gannet at the Ailsa Craig SPA; Northern gannet at the Flamborough and Filey Coast SPA; Northern gannet at the St Kilda SPA; Manx shearwater at the Copeland Islands SPA; Manx shearwater at the Rum SPA;	Noted

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		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	
		For seabirds in the non-breeding season the HRA Stage 1 Screening Report did note that 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) including the SPAs that contribute to the population in the BDMPS region. The HRA Stage 1 Screening Report states that "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." While we agree with this approach, the HRA Stage 1 Screening Report has not specified where SPAs have connectivity specifically in the non-breeding season (i.e. through BDMPS).	Noted. As confirmed in our email dated 20th October 2023, Table 6.4 of the Salamander Project HRA Screening Report (SBES, 2023a) identifies the sites and features taken forward for assessment but it is appreciated that it does not specify breeding season or non-breeding season for breeding birds. Appendix B of the Salamander Project HRA Screening Report (SBES, 2023a) identifies species and sites taken forward for breeding birds in the non-breeding season, concluding no LSE for breeding seabird in the non-breeding season for all sites carried to stage 2 screening for northern fulmar (*Fulmarus glacialis*) (hereafter referred to as 'fulmar'), Manx shearwater, gannet, great skua, lesser black-backed gull, herring gull, great black-backed gull, kittiwake, common guillemot (*Uria aalge*) (hereafter referred to as 'guillemot'), razorbill, and Atlantic puffin (*Fratercula arctica*) (hereafter referred to as 'puffin'). The approach taken is that all breeding birds in the non-breeding season are screened out unless LSE has been concluded in the breeding season – in these cases impacts will be considered across the annual cycle. It is noted in the NatureScot email dated 17th November 2023 that NatureScot 'do not agree with the approach outlined above and our advice in Guidance Note 4: Guidance to Support Offshore Wind Applications: Ornithology - Determining Connectivity of Marine Birds with Marine Special Protection Areas and Breeding Seabirds from Colony SPAs in the Non-Breeding Season should be used to determine

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			connectivity in the non-breeding season'. For clarity, the approach to screening applied the above referenced Nature Scot advice (NatureScot, 2023d) by using the BDMPS polygons to determine potential connectivity in the non-breeding seasons. Potential for LSE in the non-breeding season was screened out on the basis of the scale of the Salamander Project and the scale of the BDMPS.
		The potential collision risk to migratory species should be assessed qualitatively with reference to the survey results and the existing strategic level report WWT and MacArthur Green (2014) (Strategic assessment of collision risk of Scottish offshore wind farms to migrating birds). However, we advise that an updated review of migratory routes and vulnerabilities across the UK is currently being prepared on behalf of Marine Directorate. This work also includes development of a stochastic migration CRM tool (known as mCRM) to enable quantitative assessment of risks to migratory Special Protection Area (SPA) species including swans, geese, divers, seaduck and raptors. The updated review and its associated mCRM tool should be available imminently to then be used within the assessment.	It is noted that the mCRM tool is currently not finalised[5], and the Cumulative Effects Framework (CEF) tool has not yet been published (this will include an updated version of the mCRM tool). Therefore, quantitative assessment of impacts to migratory birds is challenging. A response was received from NatureScot on this matter in the email dated 17th November 2023, specifically 'We advise that the recently published report: Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool should be used when considering connectivity and any further assessment on impacts to migratory bird species'. The British Trust for Ornithology (BTO) Strategic Ornithological Support Services Migration Assessment Tool (SOSS MAT) has been used in the EIAR (**Volume ER.A.3, Chapter 12 Offshore and Intertidal Ornithology**) to identify the potential for interaction between migrating birds and the Offshore Development Area. Where present,
		The HRA Stage 1 Screening Report screens out LSE for migratory birds citing the WWT Consulting and MacArthur Green (2014) report: "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" as well as this conclusion for Moray West "the strategic assessment was undertaken on a worst case basis, that a number of projects had been withdrawn and that	

[5] https://www.gov.scot/publications/strategic-study-collision-risk-birds-migration-further-development-stochastic-collision-risk-modelling-tool-work-package-1-strategic-review-birds-migration-scottish-waters/pages/3/

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		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." Appendix B within the HRA Stage 1 Screening Report only specifically names two SPAs in relation to migratory waterbirds, Loch of Strathbeg SPA and Ythan Estuary, Sands of Forvie and Meikle Loch SPA. This does not provide clear justification for which species are within migratory pathways and this statement is not verified by the references provided (with a few exceptions). Recommend seeking an update on the ongoing migratory collision risk project from MD-LOT. If published in time this should be used within the appraisal as it will take account of the increased number of proposed offshore wind projects in Scottish waters as well as the increase in turbine heights. If this is not published in time, advise further consideration in the assessment to bird migration pathways as presented in WWT and McArthur Green (2014).	spatial overlap is minimal, with the Salamander Project having potential to interact with a small proportion of migration corridors for all species. Additionally, no migratory birds were observed in the site specific DAS, further indicating limited interaction with migration routes. Migratory birds were scoped out of further assessment from the EIAR and remain screened out of the RIAA as a result of a lack of potential for LSE.
		We expect apportioning during the breeding season to be undertaken following the theoretical approach (Interim Guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs), with the exception of kittiwake, guillemot, razorbill and shag species, which should use the apportioning tool (Butler et al. 2020) (Butler, A., Carroll, M., Searle, K., Bolton, M., Waggitt, J., Evans, P., Rehfisch, M., Goddard, B., et al. (2020). Attributing seabirds at sea to appropriate breeding colonies. Scottish Marine and Freshwater Science 11(8). Marine Scotland Science.). For most species, non-breeding season impacts should be apportioned using the BDMPS approach (Furness, 2015) (Furness, R.W. (2015). Non-breeding season populations of	During the breeding season, a theoretical approach (the Interim Guidance referred to (NatureScot, 2018)) has been applied to determine the proportion of birds from SPA sites which use the proposed development area in the breeding season. In the non-breeding period, the standard approach to apportioning that utilises the information presented in Furness (2015), is adopted. The Butler tool is noted (Butler et al. 2020). However, to run the Butler tool with the recently updated colony count data[6] requires an update to the tool (which is understood to be pending) before it can be applied. The apportioning undertaken here therefore applies the theoretical

[6] https://jncc.gov.uk/our-work/seabirds-count/

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		seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, No.164.). Species where we expect a majority of the breeding season population to be present in the surrounding region in the non-breeding season (for example guillemot and herring gull), the correct population to assess impacts for in the non-breeding season is a regional one defined by the breeding season mean-max foraging range plus 1 standard deviation distance. For guillemot, non-breeding season impacts should be apportioned based on breeding season regional populations with reference tracking data from Buckingham et al. (2022) (Buckingham, L., Bogdanova, M.I., Green, J.A., Dunn, R.E., Wanless, S., Bennett, S., Bevan, R.M., Call, A., Canham, M., Corse, C.J. and Harris, M.P., 2022. Interspecific variation in non-breeding aggregation: a multi-colony tracking study of two sympatric seabirds.). Apportioning is not required for puffin in the non-breeding season. For herring gull during the non-breeding season – a correction factor should be applied to the breeding season regional population to account for the influx of non-UK and west coast UK birds into the North Sea BDMPS.	approach excluding the Butler Tool but inclusive of the updated colony count data and therefore provides the most up to date apportioning results for the Salamander Project. Guillemot non-breeding season impacts apportioned based on breeding season regional populations as requested. Puffin in the non-breeding season – noted. Herring gull correction factor applied.
		Population Viability Analysis (PVA) We support the use of the NE PVA tool (Searle et al, 2019) – please see guidance note 11 (Guidance Note 11: Guidance to support Offshore Wind Applications: Marine Ornithology - Recommendations for Seabird Population Viability Analysis (PVA)) for further advice, noting that the modelling of impacts should be undertaken over three time periods: 25 years 35 years - the lease period	PVA has been undertaken for a range of scenarios, including those specified by NatureScot (25, 35, and 50 years). Impacts against regional populations and SPA populations have been assessed, to inform the EIAR (**Volume ER.A.4, Annex 12.4: Population Viability Analysis (PVA)** and **ER.A.4, Annex 12.9: Cumulative Assessment PVA**) and HRA (**Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**), respectively. It should be noted that, whilst PVA has been undertaken for the

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		50 years	periods specified, the Exclusivity Agreement (i.e. not yet a Lease) is for 25 years. However, the worst-case scenario is for a 35 year project lifetime, therefore, outputs for the 35-year scenario are used to inform the assessment.
		While we use a threshold of 0.02 percentage point to determine the need for PVA, we do not advocate use of a threshold when considering counterfactuals metrics. Instead we expect narrative to accompany the PVA output tables to justify assessment conclusions.	
		Transboundary / cross border impacts Non-Scottish sites scoped in include: Coquet Island SPA for black-legged kittiwake, northern fulmar and Atlantic puffin; Farne Islands SPA for black-legged kittiwake and Atlantic puffin; Northumberland Coast Ramsar for black-legged kittiwake; and Rathlin Island SPA for northern fulmar. Content with this approach for seabirds during the breeding season.	Noted
		A precautionary approach has been used to screen in Special Areas of Conservation (SACs) designated for grey and harbour seals, with a 200km distance applied for determining potential LSE. As per Section 5.3 of the HRA Stage 1 Screening Report we advise in relation to connectivity for seals - 50km for harbour seal and 20km for grey seal. Therefore, any SACs with harbour and grey seal features located outwith these distances should be screened out from further assessment	Noted and as confirmed in email from NatureScot dated 21 September 2023 we note that NatureScot advice is 'we are content that all European sites with grey seal, harbour seal and porpoise features are outwith connectivity distances and can also be screened out from further assessment' Therefore, all such harbour seal, grey seal and harbour porpoise are screened out from assessment.
		Potential impacts We broadly agree with the impacts that are proposed to be scoped in and out of the assessment as detailed in Table 8-11 subject to the following advice. Noise-related impacts have been scoped in for assessment but only for the construction and decommissioning phases. We advise that consideration should also be given to potential impacts from	The impact of EMF on marine mammal prey species has been assessed in **Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology**. Subsequent indirect impacts on marine mammals have been assessed in **Volume ER.A.3, Chapter 11: Marine Mammals**, with EMF within the Array screened in for bottlenose dolphin from the Moray Firth SAC in the

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		operational noise. In addition, there is the potential for electromagnetic field (EMF) impacts from dynamic cables, therefore this should be scoped in for assessment. Whilst there is limited information available around the potential interaction between marine mammals, prey species and EMF from buried cables, there is an absence of information on potential interactions from these species and EMF from dynamic cables. Advice on potential monitoring of EMF is included below.	O&M phase for consistency. The impact of operational noise been assessed in **Volume ER.A.3, Chapter 11: Marine Mammals**, with operational noise within the Array screened in for bottlenose dolphin from the Moray Firth SAC in the O&M phase for consistency.
		As noted in the HRA Stage 1 Screening Report, bottlenose dolphins from the Moray Firth SAC are known to regularly transit the east coast of Scotland. Therefore, we agree that the Moray Firth SAC should be screened in for bottlenose dolphin due to the location of the export cable corridor and the potential for underwater noise from piling activities and UXO clearance reaching the coastal area.	Noted. Assessment presented alone in **Section 5** and in-combination in **Section 9**. Note that comment on scoping also found that EMF from dynamic cables should be included, with EMF as an O&M pressure in the Offshore Array Area included here for consistency and correction for entanglement to apply in the O&M phase only.
		Section 6.2 of the HRA Stage 1 Screening Report has been reviewed in relation to benthic, subtidal and intertidal interests and we agree with the conclusion of no LSE on the Buchan Ness to Collieston SAC (vegetated sea cliffs) and the Sands of Forvie SAC (dunes) in relation to the offshore development. In addition, we are content that there are no other SACs with benthic, subtidal or intertidal features that have connectivity to the offshore development area.	As confirmed in email from NatureScot dated 21 September 2023 we note that NatureScot advice is that 'all sites and features in relation to benthic ecology can be screened out from further assessment'.
		Due to uncertainty on where migratory fish (Atlantic salmon, sea trout and sea and river lamprey) go within marine waters and connectivity back to natal rivers we consider these species should be assessed through EIA only and not through HRA. For some species, like seals, we have a reasonable understanding of connectivity to individual SACs. We also have population estimates for nearly all seal SAC populations in the standard data forms – part of	As confirmed in email from NatureScot dated 21 September 2023 we note that NatureScot advice is "*we have advised that as there is currently limited knowledge of the distribution and behaviour of diadromous fish species in the marine environment, including connectivity to individual SACs, and as such impacts should be*

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		the citation package. For diadromous fish species we do not have population data for any salmon or lamprey SAC on the data forms. This inability to understand connectivity to and within individual rivers to the development area, currently prohibits an informed assessment of the impact on individual site integrity. We are aware of work being led by ScotMER on diadromous fish and this is an area of research that may change conclusions on how diadromous fish are treated in both EIA and HRA going forward.	*assessed through Environmental Impact Assessment (EIA) only and not through HRA. The exception to this would be where there is clear connectivity and potential route to impact between a development and an individual SAC due to for example close proximity to infrastructure such as the Export Cable Corridor or landfall. As the River Dee SAC is approximately 50 km from the proposed landfall and export cable corridor we advise that this site can also be screened out from further HRA assessment*" Therefore all migratory fish and FWPM are screened out from assessment.
RSPB Scotland	24th April 2023, Scoping Response	The RSPB has outstanding issues with the manner in which the bio-seasons definitions from Furness (2015) have been defined for gannet and kittiwake. This is because by using the "migration-free" seasonal definition as opposed to full breeding season the early and later months of the season are effectively excluded. For example, the kittiwake breeding season is defined as May to July, when evidence from colony monitoring shows that birds are present from April at least to August. In the latter part of the season all birds will have fledged but individual birds will still be present with both young and adult birds coming back to the cliff. These are still SPA [Special Protection Area] birds, and those most likely to be affected by impacts from the development	Following NatureScot guidance and Royal Society for the Protection of Birds (RSPB) comments on the Scoping Report, the 'migration-free' seasons defined by Furness (2015) were not used to produce regional population estimates. For kittiwake and gannet, the seasonality was based on NatureScot (2020b). Kittiwake breeding season is considered to be mid April to August, with the non breeding season covering September to mid April. For gannet, the breeding season is mid March to September and non breeding is October to mid March. Details on seasonality and regional populations are provided in **Volume ER.A.4, Annex 12.5: Displacement Assessment** and **Volume ER.A.4, Annex 12.8: Offshore Ornithology Regional Populations Report**. Seasonal definitions specific to SPA populations, are consistent with

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<tr><td></td><td></td><td></td><td>the method requested by NatureScot (as referenced in the technical reporting referenced in Table 1-4).</td></tr>
<tr><td></td><td></td><td>We welcome using foraging ranges as published in Woodward et al. (2019) to derive connectivity with SPA colonies. We also recommend that site specific data are examined and where the maximum foraging range from the colony exceeds the generic value, that the site-specific value is used. The exceptions to this are for common guillemot and razorbill. Tracking on Fair Isle showed foraging for both common guillemot and razorbill distances are greater than those of all other colonies. This may relate to poor prey availability during the study. However, trends for seabirds in the Northern Isles indicate this may be becoming a more frequent occurrence. For all designated sites south of the Pentland Firth (i.e. excluding the Northern Isles), we advise use of mean max (MM) plus one standard deviation (SD) discounting Fair Isle values. For clarity, North Caithness Cliffs SPA is considered to lie south of the Pentland Firth.

<table>
<tr><th></th><th>All northern Isle SPAs</th><th>All sites south of Pentland Firth</th></tr>
<tr><td>Common guillemot</td><td>153.7 MM+SD</td><td>95.2 MM+SD</td></tr>
<tr><td>Razorbill</td><td>164.6 MM+SD</td><td>122.2 MM+SD</td></tr>
</table></td><td>Noted, with the method applied being consistent with the method requested by NatureScot (noting that the foraging range tool applied was developed by NIRAS for NatureScot and includes site specific foraging ranges where requested).

For Fair Isle – the SPA is located >200 km from the Offshore Array Area and therefore beyond the foraging ranges provided.</td></tr>
<tr><td></td><td></td><td>The test of Likely Significant Effect (LSE) is a simple screening stage to determine whether or not an appropriate assessment is required. Each qualifying interest must be considered in relation to their conservation objectives. We agree with the overarching conclusion of potential for LSE in relation to ornithological features.

An assessment to determine the implications of a plan or project on the identified European</td><td>Noted.</td></tr>
</table>

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
		sites in view of that site's conservation objectives is therefore required is required. This must consider impacts from the development alone as well as in combination with those from other plans and projects.	
		In relation to ornithology, the EIA will contain complex statistical models, the output of which is not readily understood by a lay person. A non-technical summary (NTS) is therefore vital to set out the main findings of the EIA report in an accessible way and in plain English so that it is easily understood by the public. We recommend the NTS contains clear information on how the mitigation hierarchy has been followed.	The NTS prepared by the project is to support the EIAR and not the HRA. However, it does include the information requested and supports the lay person in the use of the ornithological technical reporting.
Marine Directorate (Scoping Opinion)	21st June 2023, Scoping Response	The Proposed Development is in a location which may require the consideration of a derogation package under regulation 49 of The Conservation (Natural Habitats, &c.) Regulations 1994 ("1994 Habitats Regulations") and regulation 29 of The Conservation of Offshore Marine Habitats and Species Regulations 2017 ("2017 Offshore Habitats Regulations"), with identification of suitable compensation measures as well as evidence of meeting all the required tests. The Developer should continue to liaise with MD-LOT on this point going forward.	Noted, with an additional meeting held on 13th October 2023, where the view of Marine Scotland was sought as regards the need for a derogation.
		The Scottish Ministers highlight that the HRA should be updated to take into account the representations provided by consultees and an updated version submitted alongside the EIA Report.	Noted. Where an update to Screening is required, this is summarised in **Table 2-1** .
		Benthic ecology The Scottish Ministers conclude that there are unlikely to be any transboundary or cross border impacts for benthic interests and agree with the conclusion of no likely significant effect on the Special Areas of Conservation ("SAC") included within the HRA Screening	Noted

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
		Report.	
		Migratory fish With regard to the HRA Screening Report, the Scottish Ministers highlight the NatureScot representation and agree that migratory fish should be assessed through the EIA process only and not the HRA process.	Noted
		Marine mammals In regard to the HRA Screening Report, the Scottish Ministers agree with NatureScot representation that SACs with harbour and grey seal features located outwith 50km for harbour seal and 20km for grey seal should be screened out from further assessment. Further to this, the Scottish Ministers agree that the Moray Firth SAC should be screened in for bottlenose dolphin due to the location of the export cable corridor and the potential for underwater noise from piling activities and UXO clearance reaching the coastal area.	Noted
		Ornithology In regard to the HRA Screening Report, the Scottish ministers highlight NatureScot comments in relation to guidance notes used and advise the Developer must address this. The Scottish Ministers also advise the Developer that if wet storage is to be an integral part of the application, then impacts arising from wet storage must also be fully addressed in the HRA, with specific reference to the NatureScot comments in relation to the potential impact on shag populations. The Scottish Ministers are content with the 5 Special Protected x (“SPA”) screened out of the HRA Screening Report within Section 6.4.2.1 and this is supported by the NatureScot representation. However, the Scottish Ministers agree with NatureScot that no further species or sites should be scoped out based on one year of data collection, and as such until	Noted. These comments have been responded to separately under ‘NatureScot’ above.

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
		the second year of data becomes available for review, the Scottish Ministers cannot agree the species or sites scoped out in Section 6.4.2.3 of the HRA Report at this stage, with the exception of those mentioned below. With regard to gannet, the Scottish Ministers agree that the sites Ailsa Craig SPA, Flamborough and Filey Coast SPA and St Kilda SPA can be screened out for further assessment during the breeding season. The Scottish Ministers advise that there is a data gap on gannet tracking in the north east and therefore Sule Skerry and Sule Stack SPAs must be screened in for further assessment. This is a view supported by the NatureScot representation. In addition, the Scottish Ministers highlight the RSPB Scotland representation on bio-seasons for kittiwake and gannet. Similarly, with regard to Manx shearwater, the Scottish Ministers agree with the NatureScot representation on the approach to screen out Manx shearwater during the breeding season from Copeland Islands SPA, Rum SPA and Skomer, Skokholm, Seas off Pembrokeshire SPA and Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA. The Scottish Ministers highlight the NatureScot representation regarding seabirds in the non-breeding season with regard to the BDMPS region and potential connectivity and advise that the Developer must fully consider and address this within the HRA. The Scottish Ministers refer the Developer to NatureScot comments regarding connectivity and identification of key sites for migratory birds (non-seabirds) and advise the Developer must fully consider and address the advice and recommendations provided. The Scottish Ministers are content with the sites scoped in with regard to transboundary/cross border impacts for seabirds during the breeding season. This is a view supported by the NatureScot representation.	

Consultee	Date and Forum	Topic and Agreements	Where it is addressed within this Offshore RIAA
Natural England	21 June 2023, Scoping Response	The advice contained within this letter is provided by Natural England, which is the statutory nature conservation body within English territorial waters (0-12 nautical miles). We also have delegated responsibility from JNCC to also advise on offshore wind farms in all English waters out to 200 nautical miles or the median line. Due to our remit, we have limited our advice to species from English protected sites and to species in English waters. We defer to NatureScot and JNCC for advice on Scottish matters. Natural England considers that all matters in which they have an interest in English waters have been adequately considered in the HRA screening.	Noted. To confirm sites in England screened in are: Coquet Island SPA Farne Islands SPA Northumberland Marine SPA

1.8.2 Further Consideration of Petrel and Shearwater

1.8.2.1 The comment from NatureScot regarding confirmation of screening conclusions for petrel and shearwater related to specific sites, with these considered in **Table 1-3** below.

Table 1-3 Confirmation of screening conclusions for petrel and shearwater

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
Auskerry SPA	European storm petrel	8 individuals (August 2021)	The species has a large foraging range (Woodward et al., 2019), with peak densities to the north of the Salamander Project and west of the UK during the breeding season (Waggitt *et al.,* 2019). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that ‘we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander…. For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant’. Therefore the very low numbers observed at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES, 2023a) identified storm petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The large foraging range, low to very low vulnerability to the Salamander Project and the low densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	No LSE
Copeland Islands SPA	Manx shearwater	No birds recorded	NatureScot and NIEA agreed with the conclusion of no LSE **(Table 1-2**)	
Flannan Isles SPA	Leach’s petrel	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2019). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that ‘we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander….. For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant’. Therefore the absence of observed birds at the Salamander Project is not a consequence of survey design.	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
			The HRA Screening Report (SBES, 2023a) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
Foula SPA	Leach's petrel	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,*2020). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander..... For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the absence of observed birds at the Salamander Project is not a consequence of survey design. The HRA Screening Report (SBES 2023) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA	Manx shearwater	No birds recorded	NatureScot agreed with the conclusion of no LSE (**Table 1-2**)	

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
Irish Sea Front	Manx shearwater	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). 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. The conclusion of no LSE applies equally to the Irish Sea Front SPA, which is not a nesting ground but functionally linked to each of the SPAs screened out.	No LSE
Isle of Scilly SPA	Manx shearwater	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of shearwater in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander. Other species, such as Manx shearwater are recorded more regularly around the UK. Recently we have recorded very high raw observations of shearwaters in the Celtic and Irish Sea (in the 1,000s), and in the northern North Sea'. Therefore the absence of observed individuals at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES 2023) identified Manx shearwater as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	No LSE
Mousa SPA	European storm petrel	8 individuals (August 2021)	The species has a large foraging range (Woodward et al., 2019), with peak densities to the north of the Salamander Project and west of the UK during the breeding season (Waggitt *et al.,* 2019).	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
			As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander…. For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the very low numbers observed at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES 2023) identified storm petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The large foraging range, low to very low vulnerability to the Salamander Project and the low densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
North Rona and Sula Sgeir SPA	European storm petrel	8 individuals in August 2021	The Salamander is located well out of foraging range for the SPA population as the species does not cross the UK to forage.	No LSE
	Leach's petrel	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander….. For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the absence of observed birds at the Salamander Project is not a consequence of survey design. The HRA Screening Report (SBES 2023) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project.	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
			The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
Outer Ards Ramsar	Manx shearwater	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,*2020).	No LSE
Outer Firth of Forth and St Andrews Bay Complex	Manx shearwater	No birds recorded	As regards the occurrence of shearwater in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander.....Other species, such as Manx shearwater are recorded more regularly around the UK. Recently we have recorded very high raw observations of shearwaters in the Celtic and Irish Sea (in the 1,000s), and in the northern North Sea'. Therefore the absence of observed individuals at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES, 2023a) identified Manx shearwater as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	No LSE
Ramna Stacks and Gruney	Leach's petrel	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander..... For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the absence of observed birds at the Salamander Project is not a consequence of survey design.	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
			The HRA Screening Report (SBES, 2023a) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
Rum SPA	Manx shearwater	NatureScot agreed with the conclusion of no LSE (**Table 1-2**)		
Skomer, Skokholm and Seas off Pembrokeshire SPA	Manx shearwater	NatureScot agreed with the conclusion of no LSE (**Table 1-2)**		
St Kilda	Leach's petrel	No birds recorded	The species has a considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of petrels in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander..... For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the absence of observed birds at the Salamander Project is not a consequence of survey design. The HRA Screening Report (SBES, 2023a) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
	Manx shearwater	No birds recorded	Considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of petrels and shearwater in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander.....Other species, such as Manx shearwater are recorded more regularly around the UK. Recently we have recorded very high raw observations of shearwaters in the Celtic and Irish Sea (in the 1,000s), and in the northern North Sea, …. For petrel species such as Storm petrels, we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the very low numbers observed at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES, 2023a) identified Manx shearwater as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	No LSE
Sule Skerry and Sule Stack SPA	European storm petrel	8 individuals in August 2021	The Salamander is located well out of foraging range for the SPA population as the species does not cross the UK to forage.	No LSE
	Leach's petrel	No birds recorded	Considerable foraging range (Woodward et al., 2019) but with limited densities in the North Sea during the breeding season (Waggitt *et al.,* 2020). As regards the occurrence of petrels and shearwater in DAS, the survey company who conducted the DAS at the Salamander Project noted that 'we have regularly recorded petrels and shearwaters offshore in other areas, generally during the summer and post-breeding season, using the same survey methodology as for Salamander..... For petrel species such as Storm petrels,	No LSE

Site	Species	DAS (year 1 and year 2)	Screening Justification	Screening Conclusion
			we are seeing them more regularly as we are now flying over areas where they are generally more abundant'. Therefore the very low numbers observed at the Salamander Project in a single month is not a consequence of survey design. The HRA Screening Report (SBES, 2023a) identified Leach's petrel as having a low to very low vulnerability to the majority of pressures associated with the Salamander Project. The considerable foraging range, low to very low vulnerability to the Salamander Project and the lack of birds in DAS combined with limited densities in the vicinity of the Salamander Project result in a conclusion of no LSE.	
Treshnish Isles SPA	European storm petrel	8 individuals in August 2021	The Salamander is located well out of foraging range for the SPA population as the species does not cross the UK to forage.	No LSE

1.9 Baseline, Project Reporting and Designated Sites

1.9.1 Baseline and Project Reporting

1.9.1.1 The Offshore RIAA draws on wider Salamander Project EIAR Chapters and Technical Annexes to inform the understanding of the existing environmental baseline (drawing from project specific surveys and the wider literature) and how the Salamander Project will interact with the existing environment. That information is not repeated here, but is found in the key project references, which are presented in **Table 1-4.**

Table 1-4 Summary of the Salamander Project Environmental Impact Assessment Report chapters and technical annexes referenced in the Offshore Report to Inform Appropriate Assessment

Document Title	Document Reference	Key Information
Project Description	**Volume ER.A.2, Chapter 4**	Contains the project description, with a receptor specific project description provided in each receptor EIAR chapter. The Project Design Envelope applied here for assessment draws on the project description presented in the relevant EIAR chapters referenced within this table, and for marine mammals is provided in **Table 1-5** and for ornithology in **Table 1-6**.
Cumulative Effects Assessment Technical Annex	**Volume ER.A.4, Annex 6.2**	Sets out the methodology and list of plans p projects considered in the EIAR.
Stakeholder Consultation	**Volume ER.A.2, Chapter 5**	Summarises all stakeholder consultation undertaken for the Salamander Project. Consultation relevant to the RIAA is provided in **Table 1-2**.
Benthic and Intertidal Ecology	**Volume ER.A.3, Chapter 9**	Provides the baseline environment and impact assessment for benthic and intertidal ecology.
Fish and Shellfish Ecology	**Volume ER.A.3, Chapter 10**	Provides the baseline environment and impact assessment for fish and shellfish ecology.
Marine Mammals	**Volume ER.A.3, Chapter 11**	Provides the baseline environment and impact assessment for marine mammals (and is particularly important for the marine mammal assessment presented here alone in **Section 5** and in-combination in **Section 9**.
Underwater Noise Modelling Report	**Volume ER.A.4, Annex 4.1**	Provides the approach to and conclusions from underwater noise modelling undertaken for the Salamander Project.
Offshore and Intertidal Ornithology	**Volume ER.A.3, Chapter 12**	Provides the baseline environment and impact assessment for offshore and intertidal ornithology (and is particularly important for the offshore ornithology assessment presented here alone in **Section 7** and in-combination in **Section 11**.

Document Title	Document Reference	Key Information
Offshore Ornithology Baseline Data Report Offshore Ornithology Regional Populations Report	**Volume ER.A.4, Annex 12.1** **Volume ER.A.4, Annex 12.8**	Provides baseline information for offshore ornithology.
Collision Risk Modelling Report	**Volume ER.A.4, Annex 12.3**	Provides the approach to and conclusions from collision risk modelling undertaken for the Salamander Project.
Displacement Assessment	**Volume ER.A.4, Annex 12.5**	Provides the approach to and conclusions for displacement and barrier effects provided for the Salamander Project.
Displacement Assessment SeabOrd	**Volume ER.A.4, Annex 12.6**	
Population Viability Analysis (PVA)	**Volume ER.A.4, Annex 12.4** and **ER.A.4, Annex 12.9**	Provides the approach to and conclusions from non-site specific population modelling undertaken for the Salamander Project.
Shipping and Navigation	**Volume ER.A.3, Chapter 14**	Provides the baseline environment and impact assessment for shipping and navigation.

1.9.2 Designated Sites

1.9.2.1 HRA Stage 3 Screening (SBES, 2023a) identified the sites and features where the potential for the Salamander Project to result in an LSE, alone or in-combination, could not be ruled out. Following consultation (**Table 1-2**) those conclusions as relevant to the Offshore RIAA have been updated and confirmed here in **Section 2**, with comments relevant to onshore to be subsequently addressed in the Onshore RIAA. A number of sources of information are drawn on for that assessment, which collectively provide information on the designated sites, the features, and (where available) relevant information such as site condition, conservation objectives, feature sensitivity etc. That information is presented in **Appendix B: Information on the Designated Sites Screened In**.

1.10 Project Design Envelope Parameters

1.10.1.1 Given that the realistic worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, as set out in **Volume ER.A.2, Chapter 4 Project Description**, confidence can be taken that development of any alternative options within the Project Design Envelope Parameters will give rise to no effects greater or worse than those assessed in this Offshore RIAA. The Project Design Envelope Parameters relevant to the Offshore RIAA are presented within relevant EIAR Chapters and are repeated here in **Table 1-5** and **Table 1-6**.

1.10.1.2 Project Design Envelope Parameters for benthic ecology and migratory fish (and freshwater pearl mussel (FWPM)) are not provided here, as all receptors have been screened out. The information is presented in the wider project reporting referenced in **Table 1-4**.

1.10.1.3 The relevant Project Design Envelope Parameters for marine mammals are provided in **Table 1-5**.

Table 1-5 Project Design Envelope parameters for Marine Mammals

Potential Impact and Effect	Project Design Envelope Parameters
Construction	
PTS from geophysical surveys	Pre-construction and construction geophysical equipment could include any or all of the following: sub-bottom profiling (SBP); multibeam echosounder (MBES); Side Scan Sonar (SSS) with piggybacked magnetometer. The SSS/magnetometer would be towed behind the vessel (tow fish), to avoid disturbance from the vessel, and could use ultra-short baseline (USBL) positioning systems. NOTE: geophysical surveys will be licensed under a separate Marine Licence, but are included in this EIAR chapter impact assessment for illustrative purposes.
Disturbance from pre-construction geophysical surveys	
PTS from UXO clearance	As the detailed pre-construction surveys have not yet been completed, it is not possible at this time to determine how many items of UXO will require clearance. Primary method will be low-order deflagration, but high-order clearance is assessed as the realistic worst-case scenario. Assumed maximum charge weight is 698 kg (TNT equivalent). NOTE: UXO clearance will be licensed under a separate Marine Licence, but are included in this EIAR chapter impact assessment illustrative purposes.
Disturbance from UXO clearance	
PTS from piling	WTGs: • Maximum of 7 WTGs. • Maximum pile diameter shall be 3 m. • Maximum hammer energy during piling scenario 1 (up to 1 pile per day): 2,500 kJ. • Maximum hammer energy during piling scenario 2 (up to 4 piles per day): 1,500 kJ. • Maximum 8 piled anchors per WTG = 56 piled anchors for WTGs in total. • No concurrent piling shall occur. Sub-sea hubs: • Maximum of 2 hubs. • Maximum pile diameter shall be 1.5 m. • Maximum hammer energy during piling: 2,500 kJ. • Maximum 12 piled anchors per hub = 24 piled anchors for hubs in total. • No concurrent piling shall occur. Total number of piled anchors = 56 WTG piled anchors + 24 Hub piled anchors = 80 total
Disturbance from piling	
PTS from other construction noise	

Potential Impact and Effect	Project Design Envelope Parameters
Disturbance from other construction noise	• Inter-array cable and export cable installation: Jetting, Vertical Injection, Mass Flow Excavation, Ploughing / Pre-Ploughing, Trenching / Pre-Trenching (incl. dredging, cutting, with or without backfill) may all be required • Landfall shall be trenchless. • Construction shall be within an 18-month period.
Disturbance from vessels	Overall offshore construction period has a window of 2.5 years, with construction activities taking place over a period of up to 18 months, specifically: • ≤18 months mooring/anchors • ≤18 months cable installation • ≤8 months substructure/WTG Number of simultaneous vessels on-site: • Jack-up vessels: ≤1 • Heavy lift crane vessels: ≤1 mooring/anchoring, ≤1 substructure/WTG • Cable laying vessel: ≤1 • Cable burial/jointing vessels: ≤1 • Shallow water cable barge: ≤1 • Anchor handling vessels: ≤2 mooring/anchors, ≤6 cable installation, ≤3 substructure/WTG • Offshore Construction Vessel: ≤1 mooring/anchors, ≤1 substructure/WTG • Support vessels (includes light construction vessels such as SOVs, guard vessels, diving vessels and survey vessels): ≤12 vessels. • Crew transfer vessels: ≤2 cable installation, ≤2 substructure/WTG Vessel trips (round trip): • Jack-up vessels: ≤2 • Heavy lift crane vessels: ≤14 mooring/anchoring, ≤7 substructure/WTG • Cable laying vessel: ≤14 • Cable burial/jointing vessels: ≤14 • Shallow water cable barge: ≤2 • Anchor handling vessels: ≤56 mooring/anchors, ≤84 cable installation, ≤21 substructure/WTG • Offshore Construction Vessel: ≤7 mooring/anchors, ≤14 substructure/WTG • Support vessels (includes light construction vessels such as SOVs, guard vessels, diving vessels and survey vessels): ≤2 mooring/anchors, ≤12 cable installation, ≤2 substructure/WTG • Crew transfer vessels: ≤14 cable installation, ≤180 substructure/WTG Total time on site: • Jack-up vessels: ≤120 days

Potential Impact and Effect	Project Design Envelope Parameters
	• Heavy lift crane vessels: ≤84 days mooring/anchoring, ≤42 days substructure/WTG • Cable laying vessel: ≤95 days • Cable burial/jointing vessels: ≤95 days • Shallow water cable barge: ≤62 days • Anchor handling vessels: ≤84 days mooring/anchors, ≤95 days cable installation, ≤50 days substructure/WTG • Offshore Construction Vessel: ≤84 days, mooring/anchors, ≤50 days substructure/WTG • Support vessels: ≤84 days mooring/anchors, ≤95 days cable installation, ≤64 days substructure/WTG • Crew transfer vessels: ≤95 days cable installation, ≤90 days substructure/WTG Vessel transit speeds: • Jack-up vessels: 10 knots • Heavy lift crane vessels: 13 knots • Cable laying vessel: 11 knots • Cable burial/jointing vessels: 11 knots • Shallow water cable barge: 6 knots • Anchor handling vessels: 11 knots • Offshore Construction Vessel: 14 knots • Support vessels (includes light construction vessels such as SOVs, guard vessels, diving vessels and survey vessels): 14 knots • Crew transfer vessels: 25 knots
Indirect impacts on prey availability and distribution	Impact dependent on the result of the assessment presented in **Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology**.
Operation and Maintenance	
Risk of injury and entanglement with WTG mooring lines and cables	• Max 8 mooring lines per WTG for all mooring arrangement options (7 WTGs, max 56 mooring lines total) • Mooring line radius: ≤ 1,500 m (except for tension mooring lines: 125 m) • Mooring line length: ≤ 1,650 m (except for tension mooring lines: 150 m) • Mooring line diameter: ≤ 300 mm (rope), ≤ 840 mm (chain, based on 4 x chain bar diameter of ≤ 210 mm) • Dynamic cable length suspended in water column (per cable end): ≤ 250 m • Total length of dynamic cable suspended in water column: ≤ 3,500 m
Risk of injury resulting from collision with WTG substructures	A maximum of 7 WTGs; semi-submersible platform type
Operational noise impacts	A maximum of 7 WTGs

Potential Impact and Effect	Project Design Envelope Parameters
Displacement and barrier effects	A maximum of 7 WTGs, each with a maximum of 8 mooring lines (56 total mooring lines)
Indirect impacts on prey availability and distribution	Impact dependent on the result of the assessment presented in **Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology**.
Decommissioning	
PTS from decommissioning activities	At this stage, the worst-case scenario envelope during decommissioning is considered equal to the worst-case scenario during construction, with the exception of vessel movements, where more detailed information is available. Noting this, it is assumed that the worst-case scenario will involve full removal of all infrastructure placed during the construction phase. This assumption is subject to best practice methods and technology appropriate at the time of decommissioning.
Disturbance from decommissioning activities (including vessels)	
Indirect impacts on prey availability and distribution	Impact dependent on the result of the assessment presented in **Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology.**

1.10.1.4 The relevant Project Design Envelope Parameters for ornithology are provided in **Table 1-6**.

Table 1-6 Project Design Envelope parameters for Ornithology

Potential Impact and Effect	Project Design Envelope parameters
Construction	
Temporary Disturbance (Vessel-related)	**Number of vessel trips (up to 660 return trips)** Jack-Up Vessels: 2 Heavy Lift Crane Vessels: 21 Cable Laying Vessels: 14 Cable Burial / Jointing Vessels: 14 Shallow Water Cable Barge: 2 Anchor Handling Vessels: 161 Offshore Construction Vessels: 14 Support Vessels:238 Crew Transfer Vessels: 194 **Helicopter activity during construction (1 helicopter; 21 trips)**
Temporary Habitat Loss (Short-term)	**Vessels and mobile equipment (244,440 m²)** Total area of seabed disturbance from vessel anchors: 242,400 m² Total area of seabed disturbance from Jack-up events: 2,040 m²

Potential Impact and Effect	Project Design Envelope parameters
	Within Offshore Array Area (OAA) (1,532,900 m²) Total area of seabed disturbance during installation of cables: 1,400,000 m² Total area of seabed disturbance during installation of anchors: 125,900 m² (for gravity base anchors) Total area of seabed disturbance during installation of subsea hubs: 7,000 m² **Export Cable Corridor (ECC) (3,400,000 m²)** Dimensions: 85 km length at 40 m width Total area of seabed disturbance during installation of cables: 3,400,000 m² **Landfall (1,000 m²)** Duration of Landfall works: ≤8 months Total area of exit pits: 1,000 m² **Total area of temporary habitat loss (short-term) or disturbance: 5,178,340 m² (5.2 km²)**
Turbidity (Suspended Sediment)	**Drilling for anchor installation** Maximum number of pile anchors: 56 Maximum number of Subsea Hub piles: 24 Maximum dimensions of drilled pile anchor section: 3.0 m diameter, 70 m max penetration depth Maximum dimensions of drilled Subsea Hub pile section: 1.5 m diameter, 30 m max penetration depth Maximum volume of material per anchor pile: 495 m³ Maximum volume of material per Subsea Hub pile: 53 m³ Maximum volume of material all piles: 29,992 m³ **Inter-array cable installation** Maximum total length of cable trenches: <35 km Trench dimensions: 7.5 m wide (at seabed); average 2 m deep; 'V' shape profile Cable burying method: Jetting, Vertical Injection, Mass Flow Excavation, Ploughing / Pre-Ploughing, Trenching / Pre-Trenching (incl. dredging, cutting) (with or without backfill) **Offshore export cable installation** Maximum total length of trench: ≤85 km (i.e. up to 2 x 42.5 km trench) Trench dimensions: 7.5 m wide (at seabed); average 2 m deep; 'V' shape profile Cable burial method: as above for inter-array **Seabed levelling associated with anchor installation** Maximum spoil volume: 48,600 m³ (for gravity base anchors) **Sandwave levelling (within OAA)**

Potential Impact and Effect	Project Design Envelope parameters
	Localised sandwave height: 2 m Maximum volume of material that will be subject to levelling / temporary removal for offshore inter-array cables: Total = 1,624,000 m³ **Sandwave levelling (within Offshore ECC)** Localised sandwave height: 4 to 5 m Maximum volume of material that will be subject to levelling / temporary removal: Total = 5,576,000 m³
Operation and Maintenance	
Temporary Disturbance (Vessel-related)	**Number of vessel trips (up to 7,350 return trips)** Average annual service operation vessel (SOV) / crew transfer vessel (CTV) movements: up to 190 per year × 35 years = 6,650 Average annual heavy lift vessel trips (in-field maintenance): up to 3 per year × 35 years = 105 Average annual towing spread movements (tow-to-port maintenance): up to 5 per year × 35 years = 175 Average annual anchor handling vessel trips: up to 12 per year × 35 years = 420 **Number of helicopter movements (up to 4900 return trips)** Transfers: up to 140 per year × 35 years = 4,900
Distributional Responses (Displacement and Barrier Effect)	**OAA: 33.25 km²**
Collision (Collision Risk Modelling Parameters)	Latitude: 57.616 Wind Farm width: 8.7 km Tidal offset: 0 m (floating WTGs) No. WTGs: 7 No. blades: 3 per WTG Air gap: 22 m Rotor radius: 125 m Blade width (maximum): 6.5 m Rotation speed (average): 6.3 rpm Blade pitch: 2.7 ° Proportion of time operational (wind availability): 94.5%
Temporary Habitat Loss (Long-term)	**Maximum operational period: 35 years** **Short-term** (e.g. intermittent or shorter term loss associated with reburial of cable etc.) **(1,574,800 m²)** Subsea cable repair and replacement events: 14 Length of subsea cable reburial: 7,400 m (7.4 km)

Potential Impact and Effect	Project Design Envelope parameters
	Total area of seabed impacted by cable repair and reburial: 1,468,000 m² Total area of seabed impact from vessel anchors during operations: 16,800 m² Total area of seabed impact from anchor and mooring replacement: 90,000 m² **Long-term** (e.g. continuous habitat disturbance) **(4,620,000 m²)** Total swept area of seabed by mooring lines: 3,920,000 m² Total swept area of seabed by untethered dynamic-cable ends: 700,000 m² **Long-term** (e.g. habitat lost for duration of operational phase due to infrastructure) **(753,700 m²)** **OAA (409,540 m²):** Total seabed footprint of (gravity base) anchors after installation: 8,100 m² Total seabed footprint of scour protection (gravity base anchor): 117,800 m² Total seabed footprint of dynamic cable tether anchors: 22,400 m² Total area of new scour protection for mooring and anchor replacement: 84,200 m² Total seabed footprint of cable stabilisation protection: 70,000 m² Total area of new cable installation protection for cable repair and replacement: 36,000 m² Total seabed footprint of scour protection (cable jointing): 64,000 m² Total seabed footprint of subsea hubs: 450 m² Total seabed footprint of scour protection for subsea hubs: 6,550 m² Total seabed footprint of wave buoy anchor: 40 m² **Offshore ECC (344,160 m²):** Total area of cable stabilisation protection: 170,000 m² Total area of scour protection on seabed (cable jointing): 16,000 m² Total area of cable protection material on seabed: 158,160 m² **Total area of temporary habitat loss (long-term) or disturbance: 6,948,500 m² (7.0 km²)**
Decommissioning	
Currently realistic worst-case and likely scenarios for decommissioning operations will involve full removal of all infrastructure, therefore, similar impacts to the construction phase and magnitude of seabed disturbance have been considered. This assumption is subject to best practice methods and technology appropriate at the time of decommissioning.	
Disturbance (Vessel-related)	**Number of vessel trips (up to 516 return trips)** Heavy lift vessel trips: 21 Anchor handling vessels trips: 77 Support vessel trips: 238 Crew transfer vessels: 180 **Helicopter activity during decommissioning (1 helicopter; 14 trips)**

1.11 Salamander Project Programme

1.11.1.1 The indicative construction programme for major installation elements of the Salamander Project is provided in **Figure 1-3**.

1.11.1.2 The durations shown are intended to show the indicative periods during which these activities are likely to be taking place, rather than the exact duration of specific activities. The final schedule will be confirmed post-consent, once the design of the wind farm is more advanced. Further indicative programme detail is provided within in **Volume ER.A.2, Chapter 4: Project Description, Section 4.6.**

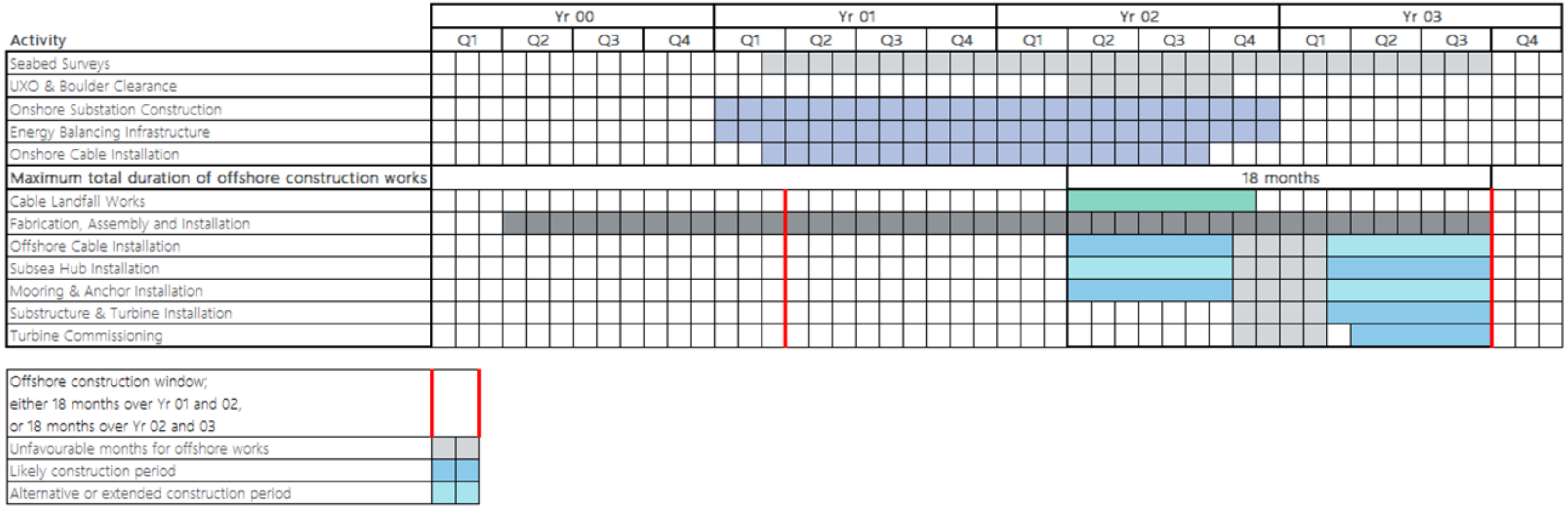


Figure 1-3 Indicative Construction Programme showing the windows within which Construction Activities may take place (noting durations of individual activities are likely to be shorter than the windows themselves, and that the programme is subject to change and will be confirmed in the Construction Programme)

1.11.1.3 Prior to the start of construction, post-consent, the Salamander Project will conduct a range of offshore survey activities, to collect the required data to inform the design of the infrastructure and ensure the safety of the construction activities. Other surveys may also take place throughout the construction period. Unexploded Ordnance (UXO) clearance may also be required if UXO are found in the Offshore Development Area; further assessment will be undertaken as part of an application for a separate Marine Licence for UXO clearance and so this activity does not form part of this Marine Licence application.

1.11.1.4 The earliest possible date that onshore construction could commence is January 2027 and the expected start of offshore operations to be a year later in Q2 of 2028. The maximum total construction duration (onshore and offshore) is three years (36 months), with offshore construction taking place within a window of 30 months. Within that offshore construction window, the maximum total duration anticipated for offshore construction (including cable landfall works) is 18 months (excluding pre-construction surveys, which will occur prior to this 18 month period). The Offshore Array is anticipated to be commissioned and operational by Q4 2029.

1.11.1.5 The operation and maintenance period will last for approximately 35 years, followed by the decommissioning phase.

1.12 Assessment Methodology

1.12.1.1 **Volume ER.A.2, Chapter 6 EIA: Methodology** sets out the general approach applied in the EIAR to the assessment of significant effects that may arise from the Salamander Project.

1.12.1.2 Whilst **Volume ER.A.2, Chapter 6: EIA Methodology** provides a general framework for identifying impacts and assessing the significance of their effects, in practice the approaches and criteria applied across different topics vary. That approach is defined within relevant EIAR chapters, with those specifically drawn on here summarised in **Table 1-7** and **Table 1-8** (noting that the information presented is limited to marine mammals and ornithology, as all other receptor groups have been screened out). The information draws on Section 11.9 from **Volume ER.A.3, Chapter 11: Marine Mammals** and Section 12.10.3 from **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**. For marine mammals, the potential for a temporal overlap of relevant activity is particularly key to the assessment and therefore a timeframe is provided including a reference.

Table 1-7 Definition of magnitude and sensitivity applied within the Environmental Impact Assessment Report for Marine Mammals and Ornithology

Receptor Sensitivity		
	Definition for Marine Mammals	**Definition for Ornithology**
High	Adaptability: No ability to adapt behaviour so that individual survival and reproduction rates are affected. Tolerance: No tolerance – Effect will cause a change in both individual reproduction and survival rates. Recoverability: No ability for the animal to recover from any impact on vital rates (reproduction and survival rates).	Very limited tolerance to the impact for a receptor of international or national importance. The receptor is unable to adapt to the impact, and will be unable to undergo a permanent recovery.

Medium	Adaptability: Limited ability to adapt behaviour so that individual survival and reproduction rates may be affected. Tolerance: Limited tolerance – Effect may cause a change in both individual reproduction and survival of individuals. Recoverability: Limited ability for the animal to recover from any impact on vital rates (reproduction and survival rates).	Very limited tolerance to the impact for a receptor of regional importance. The receptor is unable to adapt to the impact, and will be unable to undergo a permanent recovery. Limited tolerance to the considered impact is displayed by a receptor of international or national importance, where adaptability and recovery is limited, with return to acceptable status taking 1-5 years.
Low	Adaptability: Ability to adapt behaviour so that individual reproduction rates may be affected but survival rates not likely to be affected. Tolerance: Some tolerance – Effect unlikely to cause a change in both individual reproduction and survival rates. Recoverability: Ability for the animal to recover from any impact on vital rates (reproduction and survival rates)	Limited tolerance to the considered impact is displayed by a receptor of local importance, where adaptability and recovery is very limited, with return to acceptable status taking 5-10 years. Moderate tolerance to the considered impact is displayed by a receptor of regional importance, where adaptability and recovery is limited, with return to acceptable status taking 1-5 years. High tolerance to the considered impact is displayed by a receptor of international or national importance, where adaptability and recovery is rapid, with return to acceptable status taking 0-12 months.
Negligible	Adaptability: Receptor is able to adapt behaviour so that individual survival and reproduction rates are not affected. Tolerance: Receptor is able to tolerate the effect without any impact on individual reproduction and survival rates. Recoverability: Receptor is able to return to previous behavioural states/activities once the impact has ceased.	High tolerance to the considered impact is displayed by a receptor of local importance, where adaptability and recovery is rapid, with return to acceptable status taking 0-12 months. Total tolerance to the considered impact is displayed by a receptor of international, national or regional importance.
	Magnitude of Impact	
	Definition for Marine Mammals	**Definition for Ornithology**
High	Extent: Total change or major alteration to key elements/features of the baseline conditions. Duration: Occurs over a large spatial extent, resulting in widespread, long-term, or permanent changes of the baseline conditions, or affects a large proportion of a receptor population.	Total change or major alteration to key elements/features of the baseline conditions: Occurs over a large spatial extent, resulting in widespread, long-term, or permanent changes of the baseline conditions, or affects a large proportion of a receptor population.

	Probability: The impact is very likely to occur and/or will occur at a high frequency or intensity.	The impact is very likely to occur and/or will occur at a high frequency or intensity.
Medium	Extent: Partial change or alteration to one or more key elements / features of the baseline conditions. Duration: The impact occurs over a local to medium extent with a short- to medium-term change to baseline conditions, or affects a moderate proportion of a receptor population. Probability: The impact is likely to occur and/or will occur at a moderate frequency or intensity.	Partial change or alteration to one or more key elements / features of the baseline conditions: The impact occurs over a local to medium extent with a short- to medium-term change to baseline conditions, or affects a moderate proportion of a receptor population. The impact is likely to occur and/or will occur at a moderate frequency or intensity.
Low	Extent: Minor shift away from the baseline conditions. Duration: The impact is localised and temporary or short-term, leading to a short-term detectable change in baseline conditions or a noticeable effect on a small proportion of a receptor population. Probability: The impact is unlikely to occur or may occur but at low frequency or intensity.	Minor shift away from the baseline conditions: The impact is localised and temporary or short-term, leading to a detectable change in baseline conditions or a noticeable effect on a small proportion of a receptor population. The impact is unlikely to occur or may occur but at low frequency or intensity.
Negligible	Extent: Very slight change from baseline conditions. Duration: The impact is highly localised and short-term, with full rapid recovery expected to result in very slight or imperceptible changes to baseline conditions or a receptor population. Probability: The impact is very unlikely to occur; if it does, it will occur at a very low frequency or intensity.	Very slight change from baseline conditions: The impact is highly localised and short-term, with full rapid recovery expected to result in very slight or imperceptible changes to baseline conditions or a receptor population. The impact is very unlikely to occur; if it does, it will occur at a very low frequency or intensity.
No change	No change from baseline conditions.	Not applied.

Table 1-8 Definition of significance of effect applied within the Environmental Impact Assessment Report for Marine Mammals and Ornithology

Significance of effect		Receptor Sensitivity			
		Negligible	***Low***	***Medium***	***High***
Magnitude of effect	***Negligible***	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Negligible	Minor	Minor
	Medium	Negligible	Minor	Moderate	Moderate
	High	Negligible	Minor	Moderate	Major

1.12.1.3 For the purposes of the Offshore RIAA, the conclusions drawn from the application of the assessment criteria provided in **Table 1-7** and **Table 1-8** are considered here specifically in the context of the designated sites and features screened in, in light of their conservation objectives, site based advice and conservation status of features (as provided in **Appendix B: Information on the Designated Sites Screened In**). The final assessment in each case is based upon expert judgment.

2 Conclusion of Stage 3 Screening

2.1 Screening for the Salamander Project Alone

2.1.1.1 Stage 3 Screening is presented in the Salamander Project HRA Screening Report (SBES, 2023a) for the Onshore and Offshore Development, with that report subject to consultation. The consultee responses are included in **Table 1-2**, and have resulted in an update to the offshore screening conclusions originally presented in the Salamander Project HRA Screening Report (SBES, 2023a). In particular, clarity was sought via email from NatureScot as regards changes to screening conclusions for migratory fish (and FWPM) and both harbour and grey seal (as noted in **Table 1-2**), which confirmed the changes summarised in **Table 2-1**. These changes have therefore been made in response to comments made in the Scoping Opinion (MD-LOT, 2023) and as confirmed by email from NatureScot on 21 September 2023.

Table 2-1 Update to screening following receipt of consultee comments (see Table 1-2)

Change to Screening	Justification for that Change
Benthic Ecology	
No change	Agreement that all sites and features remain screened out.
Marine Mammals	
Single change to the original screening conclusions for bottlenose dolphin (single site screened in – Moray Firth SAC), namely the addition of EMF as a pressure in the O&M Phase in the Offshore Array Area to align with comments on Scoping and correction for entanglement to apply in the O&M phase only.	Addition of a single pressure for the Offshore Array Area during the O&M Phase.
No change to the original screening conclusions for harbour porpoise (no sites screened in)	No change required
Update to screening conclusion for grey seal, with the 20 km range for site connectivity recommended by Marine Directorate applied (see **Table 1-2**). All grey seal sites beyond that range screened out.	All grey seal sites now screened out as all lie outwith the 20 km range. The closest site is the Isle of May SAC at 155 km from landfall and 174 km from the array.
Update to screening conclusion for harbour seal, with the 50 km range for site connectivity recommended by Marine Directorate applied (see **Table 1-2**). All harbour seal sites beyond that range screened out.	All harbour seal sites now screened out as all lie outwith the 50 km range. The closest site is the Dornoch Firth and Morrich More SAC at 125 km from landfall and 156km from the array.
Migratory Fish and Freshwater Pearl Mussel	
Sea lamprey – all sites screened out (all sites lie beyond the relevant noise contours, the closest being the River Spey SAC at 109km distance)	The response by NatureScot and Marine Directorate on migratory fish states that 'migratory fish should be assessed through the EIA process only and not the HRA process' (**Table 1-2**). Following email

Change to Screening	Justification for that Change
River lamprey – all sites screened out (all sites lie beyond the relevant noise contours, the closest being the River Tay SAC at 147km distance)	correspondence, it is clear that any exception to this would be where clear connectivity and a potential route to impact exists between a project and an individual SAC. No such connectivity was identified for the Salamander Project and any migratory fish SAC and NatureScot agreed that all such SACs can be screened out from further HRA assessment.
Atlantic salmon – all sites screened out (the closest being the River Dee at 46 km from the Offshore ECC, 71 km from the Offshore Array Area).	
FWPM - all sites screened out (all sites lie beyond the relevant noise contours, the closest being the River Dee at 46 km from the Offshore ECC, 71 km from the Offshore Array Area).	
Ornithology	
Breeding gannet from the Sule Skerry and Sule Stack SPA	Screened in following consultation response from NatureScot.
Northumberland Marine SPA (fulmar, kittiwake, puffin)	Addition post screening for completeness (note – site is designated for foraging and not breeding).
Northumbria Coast Ramsar (kittiwake)	The Information Sheet on Ramsar Wetlands (RIS)[7] has been reviewed during drafting of the Offshore RIAA and kittiwake are identified as 'noteworthy fauna' only and are not included as a qualifying species under the Ramsar Criteria. Site/species screened out.
Noss SPA (puffin)	Checks have confirmed the Offshore Array Area is outwith the foraging range for puffin (distance to SPA is 275 km and foraging range is 265.4 km) therefore screened in for the Offshore ECC only.
Outer Firth of Forth and St Andrews Bay Complex SPA (gannet, kittiwake, puffin)	Addition post screening for completeness (note – site is designated for feeding, moulting, resting and roosting and not breeding).
Clarification on screening for entanglement	To confirm that the pressure 'entanglement' applies in the operation and maintenance phase only.

2.1.1.2 For clarity, all sites and features screened in for potential LSE and to be assessed in the Offshore RIAA (including information on the relevant project aspect and phase together with the associated pressure) are provided in Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5', alongside confirmation of changes since Stage 3 Screening.

[7] https://jncc.gov.uk/jncc-assets/RIS/UK11049.pdf

2.1.1.3 No sites or features were screened in for both the Onshore and Offshore Development, with no potential for the Onshore Development to contribute to in-combination effect for the sites and features screened in for the Offshore RIAA. The Onshore RIAA (**Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment**) will determine the potential for the Offshore Development to contribute to an in-combination effect for the sites and features screened in for the Onshore RIAA.

2.2 Screening for the Salamander Project In-combination

2.2.1.1 Where the screening for the Salamander Project alone has identified a potential for LSE, then it is assumed that there is potential for the Salamander Project to contribute to an in-combination LSE. The determination of potential for LSE alone was made on a highly precautionary basis and initially considers the potential for connectivity. Where potential for LSE was determined on a basis other than potential connectivity, 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. During the drafting of the EIAR and the Offshore RIAA, no such contribution to any in-combination effect were identified.

2.2.1.2 Further, given the precautionary nature of screening, it is possible for some sites/features screened in for potential LSE for the offshore aspects of the Salamander Project alone to be found to have no pathway/connectivity in assessment and therefore no potential for the Salamander Project to contribute to any in-combination effect. Finally, for an in-combination effect to occur for a specific protected site and feature, there needs to be a plan or project acting in-combination.

2.2.1.3 The in-combination assessment therefore assesses the potential for the Salamander Project to contribute to an in-combination effect where:

- The Salamander Project alone has potential for a measurable impact (noting that a *de minimis* effect should be considered trivial and inconsequential), with the potential for impact determined for the Salamander Project alone in **Sections 4** to **7**); and
- There is a plan or project to act in-combination.

2.2.1.4 For offshore ornithology, the above criteria are expanded on to take into account the in-combination risk posed by public domain derogation case documents at the time of writing, specifically taking into account the following when considering which sites and species to carry forward to the in-combination assessment:

- The project alone impact is greater than or equal to one individual per year; and/or
- The project alone impact represents an increase in mortality rate of greater than or equal to 0.02 percentage points; and/or
- An Appropriate Assessment for one or more of the other projects considered has concluded there is a potential AEOI (or it is highlighted that NatureScot have raised concerns) to the feature (i.e. a full or without prejudice derogation case is available with respect to the site and species for a project being considered in-combination).

2.3 Plans and Projects to Include In-combination

2.3.1.1 For the purpose of the in-combination assessment provided here, the Cumulative Effects Note (**Volume ER.A.4, Annex 6.2: Cumulative Effects Assessment Technical Annex**) was reviewed alongside the relevant receptor specific EIAR chapters to determine which apply to the offshore RIAA for assessment.

2.3.2 Plans and Projects to assess In-combination for Benthic Ecology

2.3.2.1 No Annex I habitats were screened in for potential LSE (**Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**), with no pathway identified and therefore no potential for the Salamander Project to contribute to an in-combination effect.

2.3.3 Plans and Projects to assess In-combination for Marine Mammals

2.3.3.1 A single SAC was screened in for marine mammals, the Moray Firth SAC, with respect to bottlenose dolphin. The Conservation and Management Advice notes that the SAC[8] provides protection to the East Coast Management Unit (MU) population of bottlenose dolphin (numbering approximately 200 individuals), with the SAC population travelling throughout the Coastal East Scotland (CES) MU and with 'the population of the Moray Firth...taken as being equivalent to that of the CES Management Unit'.

2.3.3.2 A full review of plans and projects was conducted for the Salamander Project, with **Table 1-4** including those chapters relevant for marine mammals. For the purposes of the in-combination assessment provided here, the list of plans and projects included within the bottlenose dolphin cumulative assessment (**Volume ER.A.3, Chapter 11: Marine Mammals**) has been reviewed. The EIAR bottlenose dolphin cumulative assessment considered projects with the potential to contribute to disturbance of dolphin in the Coastal East Scotland (CES) Management Unit (MU) and/or the Greater North Sea (GNS) MU and therefore considers the individuals with potential connectivity to the Moray Firth SAC, as well as bottlenose dolphin more widely. A distance of 200 km was applied at screening for cetaceans (SBES, 2023a), to determine the potential for LSE on a precautionary basis, with plans and projects outwith that range excluded from the Offshore RIAA in-combination assessment. The identified plans and projects are provided in **Table 2-2** and **Figure 2-1** (noting that not all of these projects have an accompanying EIAR and therefore will not have a quantified impact assessment in the public domain), with the identified timeframe for the relevant works (that may contribute to an in-combination effect from underwater noise) highlighted for each project.

2.3.3.3 The cut-off date for in-combination assessment of new projects submitting consent and scoping applications was up to six months before the Salamander Project's offshore application submission; six months prior is the end of October 2023. Projects submitting an application or scoping report between six and two months before submission will be acknowledged but not assessed in the Offshore RIAA. A review of projects was undertaken in early March 2024 (i.e. less than two months prior to submission) and the projects that have submitted a scoping report between October and March are Stromar Offshore Wind Farm and the Broadshore Hub (Broadshore, Sinclair and Scaraben Projects) in January 2024.

[8] https://apps.snh.gov.uk/sitelink-api/v1/sites/8327/documents/59

Table 2-2 Plans and projects to consider in-combination with the Salamander Project for marine mammals (Moray Firth Special Area of Conservation) (dates for indicative piling window sourced from Volume ER.A.3, Chapter 11: Marine Mammals)

Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
Salamander	89 km (landfall) or 120 km (array)	See **Appendix A**									
Public domain information includes a project level RIAA as a minimum											
Green Volt	99.1 km (cable corridor) or 115 km (array)	Underwater noise									
Pentland	125 km (offshore site)	Underwater noise Displacement or barrier effects [9]Entanglement Collision with WTGs									
Seagreen 1A	147.7 km	No impacts taken forward for environmental appraisal									
Moray West	17.2 km (site or cable corridor)	Underwater noise Vessel collision risk									

[9] distance to the Salamander Project measured in a straight line, distance to in-combination projects from the referenced project literature

Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
Berwick Bank	167 km (array) and 193 km (cable corridor)	Underwater noise Prey availability									
Inch Cape	142.1 km (development area)	Underwater noise									
Neart na Gaoithe	165 km (wind farm area)	Underwater noise									
Public domain information limited to Scoping											
Muir Mhor	158.5 km (array), 102 km (offshore cable)	Underwater noise Prey Vessel disturbance Wet storage disturbance Entanglement Collision with WTGs Habitat change and barrier	No quantified effect available and programme subject to change.								
Cenos Offshore WInd	280 km	Underwater noise Vessel interactions	No quantified effect available and programme subject to change.								

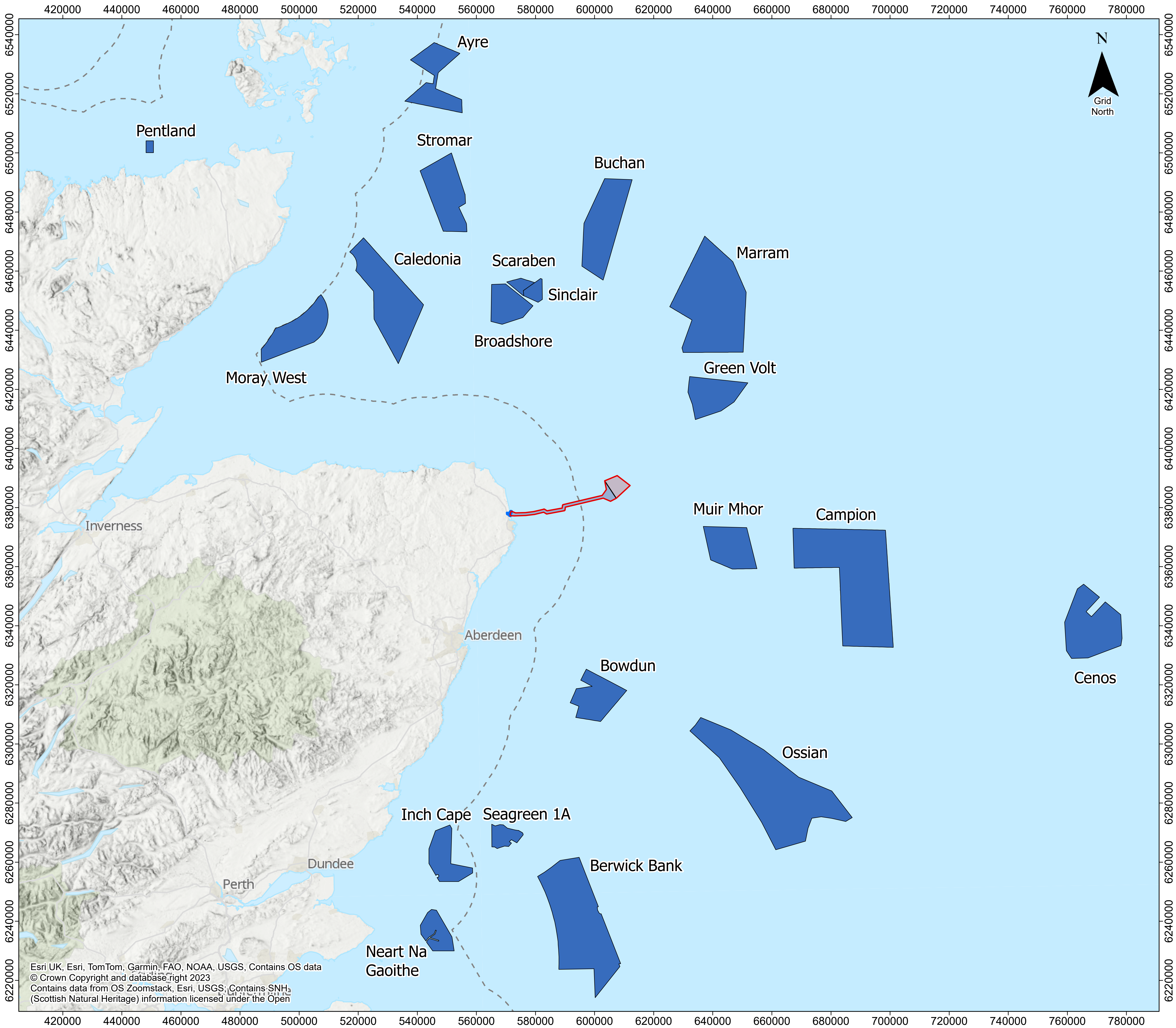
Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
		Water quality Prey resources Entanglement Physical barrier EMF and heat									
Marram Wind	Distance not stated	Underwater noise Prey Vessel disturbance/collision Habitat change Entanglement EMF	No quantified effect available and programme subject to change.								
Buchan	Distance not stated	Underwater noise Change to habitat and prey Entanglement	No quantified effect available and programme subject to change.								

Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
		Barrier to movement EMF									
Ossian	175.9 km	No potential for LSE identified	No quantified effect available and programme subject to change.								
Caledonia	57 km (array) 32 km (offshore cable)	Underwater noise Vessel collision Vessel disturbance Prey Water quality Entanglement Displacement/barrier	No quantified effect available and programme subject to change.								
Stromar[10]	Distance not stated	Underwater noise Collision Entanglement	No quantified effect available and programme subject to change.								

[10] Note that Scoping and Screening were submitted in January 2024

Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
		Physical presence of structures and vessels EMF									
Broadshore Hub	93 km	Underwater noise Collision risk with vessels Secondary entanglement Changes in prey availability In-combination effects	No quantified effect available and programme subject to change.								
Pre-Scoping											
Campion Wind	Distance not stated	To be confirmed	No quantified effect available and programme subject to change.								
Bowdun	Distance not stated	To be confirmed									
Scaraben	Distance not stated	To be confirmed									
Sinclair	Distance not stated	To be confirmed									
Ayre	Distance not stated	To be confirmed									

Plan/Project	Distance from the Moray Firth SAC?	Pressure?	Year(s) in which animals may be disturbed in the CES MU and GNS MU (indicative piling window)								
			2023	2024	2025	2026	2027	2028	2029	2030	2031
Seismic airgun survey	Distance not stated (assumed that some form of survey will occur each year)	Seismic survey									



Salamander

Figure 2-1

Plans and projects to consider in-combination with the Salamander Project for marine mammals

Legend

- Offshore Development Area
- Offshore Array Area
- Indicative Onshore Development Area
- Offshore Export Cable Corridor
- 12 nm limit
- Offshore Wind Farms

Coordinate System: WGS 1984 UTM Zone 30N

Vertical Datum : MLLW

Scale @ A3 : 1:1,250,000

0 25 50 75 Kilometers

0 5 10 20 30 Nautical Miles

Rev	Description	Date
00	First Issue	30/01/2024
01	Final	17/04/2024
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Doc. No : 81400281_011
Created by : JOSW
Checked by : SAKZ
Approved by : SAKZ

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2.3.3.4 The assessment for the Salamander Project alone with respect to marine mammals is presented in **Section 5**. Where the potential for a measurable impact (noting that a *de minimis* effect should be considered trivial and inconsequential) was identified, these are taken forward to the in-combination assessment in **Section 9**.

2.3.4 Plans and Projects to assess In-combination for Migratory Fish and Freshwater Pearl Mussel

2.3.4.1 No migratory fish or FWPM were screened in for potential LSE (**Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**), with no pathway identified and therefore no potential for the Salamander Project to contribute to an in-combination effect.

2.3.5 Plans and Projects to assess In-combination for Ornithology

2.3.5.1 An in-combination assessment for ornithology has been carried out for features where it is deemed the Salamander Project alone has a measurable contribution to an impact (and therefore to include distributional responses and collision during the O&M phase only) and may be contributing to a potential AEOI. In order to determine this, the following criteria have been used:

- The project alone impact is greater than or equal to one individual per year; and/or
- The project alone impact represents an increase in mortality rate of greater than or equal to 0.02 percentage points; and/or
- An Appropriate Assessment for one or more of the other projects considered has concluded there is a potential AEOI (or it is highlighted that NatureScot have raised concerns) to the feature (i.e. a full or without prejudice derogation case is available).

2.3.5.2 If none of those criteria are met, then it can be concluded that there is no potential for the Salamander Project, in-combination with other plans or projects, to lead to any potential for an AEOI. The sites and features identified for the ornithology in-combination assessment are provided in **Table 11-1**. It should be noted that the approach is precautionary and has been applied if the above applies to the Applicant's approach and/or the SNCB approach to assessment. The result is that some sites and features are brought forward to the in-combination assessment where under some assessment scenarios they would otherwise be excluded, but ensures the information is presented in case it is required by the Competent Authority.

2.3.5.3 Plans and projects to include in-combination have been drawn from a review of recent Applications, to determine for the sites and features identified through the above criteria which plans and projects have a measurable impact. The information has been drawn from a number of sources, primarily the Berwick Bank application with additions where specific sites and features were not addressed in that application. Projects are included where a quantified assessment is available (and therefore projects with public domain limited to Scoping are not included).

2.3.5.4 The cut-off date for in-combination assessment of new projects submitting consent and scoping applications was up to six months before the Salamander Project's offshore application submission; six months prior is the end of October 2023. Projects submitting an application or scoping report between six and two months before submission will be acknowledged but not assessed in the Offshore RIAA. A review of projects was undertaken in early March 2024 (i.e. less than two months prior to submission) and the projects that have submitted a scoping report between October and March are Stromar Offshore Wind Farm and the Broadshore Hub (Broadshore, Sinclair and Scaraben Projects) in January 2024.

Table 2-3 Plans and projects to consider in-combination with the Salamander Project for Ornithology

Plan/Project	Project Stage	Specifics
UK North Sea Projects	Variable (planning through operational) and as identified in SSE Renewables (2022a). Noting that for all of these projects, no updates on the project level impact to the sites and species screened in for the Salamander Project are available since then which could cause a variation in the apportioned impact.	Included for collision and or distributional response where the project information provides a quantified contribution to the impact. The projects included in the total are: Seagreen 1 Seagreen 1A Project Inch Cape Offshore Wind Farm Neart na Gaoithe Offshore Wind farm Beatrice Offshore Wind Farm Blyth Demo Phase 1 Blyth Demo Phase 2 Dogger Bank (Creyke Beck) A Dogger Bank (Creyke Beck) B Dogger Bank C (Teesside A) Sofia Offshore Wind Farm (Teesside B) Dudgeon East Anglia One East Anglia One North East Anglia Two East Anglia Three European Offshore Wind Deployment Centre (EOWDC) Galloper Greater Gabbard Gunfleet Sands I and II

Plan/Project	Project Stage	Specifics
		Hornsea One Hornsea Project Two Hornsea Project Three Hornsea Project Four Humber Gateway Hywind Kentish Flats Kentish Flats Extension Kincardine Offshore Wind farm Levenmouth Demonstration Turbine Lincs London Array Lynn and Inner Dowsing Wind Farms Methil Offshore Wind Farm Moray Offshore Wind Farm (East) Moray Offshore Wind Farm (West) Norfolk Boreas offshore wind farm Norfolk Vanguard Offshore Wind Farm Race Bank Scroby Sands Sheringham Shoal Teesside Triton Knoll

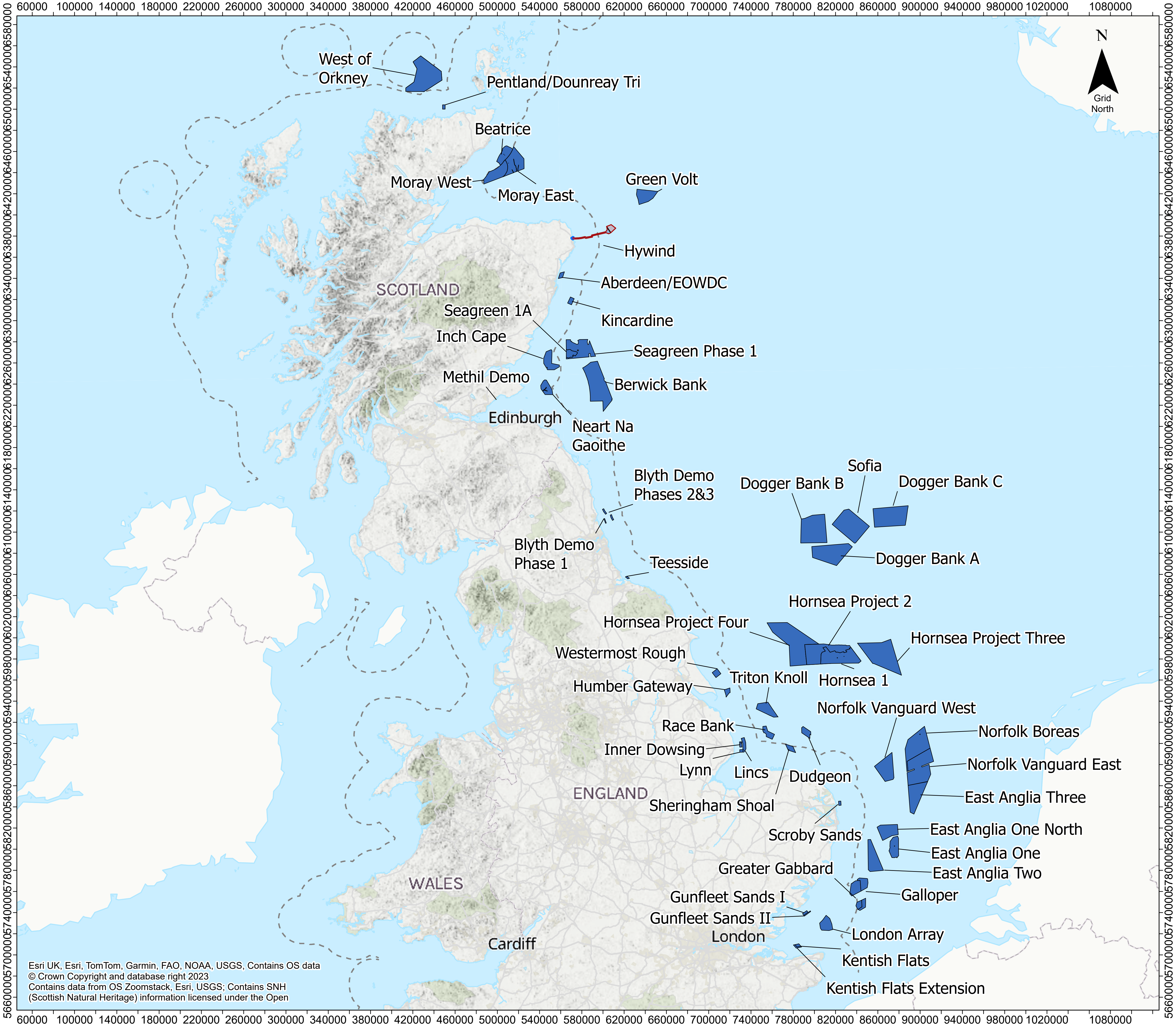
Plan/Project	Project Stage	Specifics
		Westermost Rough Wind T and D Site (Dounreay Tri Ltd)
Green Volt	Application stage as presented in Green Volt (2023)	Included for collision and or distributional response where the project information provides a quantified contribution to the impact.
West of Orkney	Application stage as presented in Offshore Wind Power Limited (2023)	Included for collision and or distributional response where the project information provides a quantified contribution to the impact. Noting that distributional response and collision information is not provided separately.
Pentland	Consented as presented in Xodus Group Ltd (2022)	Note that a revised application has been submitted with reduced impact numbers. That information is presented as total impact and not apportioned, and cannot therefore be applied in-combination. Where relevant in the assessment context is added as regards the potential reduction in contribution from this project to the in-combination totals.
Berwick Bank	Application stage as presented in SSE Renewables (2022a)	In-combination assessment presented with and without Berwick Bank numbers as requested in **Table 1-2**.

2.3.5.5 In addition to the above, the NorthConnect project is recognised, with a full application available on Marine Directorate including the projects pre-screening report and the Appropriate Assessment from the Competent Authority. The AA found potential for LSE during the construction period only for the NorthConnect project with respect to the Buchan Ness to Collieston Coast SPA, concluding no AEOI but with no quantified impact. The two Marine Licenses available are due to expire in October 2024, with construction at the Salamander Project scheduled to commence after that date (**Section 1.1**). There is, therefore, no potential for the NorthConnect project to contribute to an in-combination effect with the Salamander Project and the project has not been considered further.

Salamander

Figure 2-2

Plans and projects to consider in-combination with the Salamander Project for ornithology



Legend

- Offshore Development Area
- Offshore Array Area
- Indicative Onshore Development Area
- Offshore Export Cable Corridor
- 12 nm limit
- Offshore Wind Farms

Coordinate System: WGS 1984 UTM Zone 30N

Vertical Datum : MLLW

Scale @ A3 : 1:3,500,000

0 50 100 150 200 Kilometers

0 25 50 75 100 Nautical Miles

Rev	Description	Date
00	Final	01/02/2024
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Doc. Title : In-Combination: Ornithology
Doc. No : 81400281_012
Created by : JOSW
Checked by : SAKZ
Approved by : SAKZ

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3 Mitigation

3.1 Project Level Mitigation

3.1.1.1 All mitigation measures committed to by the Salamander Project are provided in **Volume ER.A.4, Annex 6.1: Commitments and Mitigations Register**. The mitigation measures include both avoidance, best practice and design commitments, which are classified into primary, secondary or tertiary measures in accordance with the IEMA 'Guide to Shaping Quality Development' (2015) definitions. The mitigation relevant to the Offshore RIAA is presented in **Table 3-1.** It should be noted that while mitigation was not taken into account in Stage 3 Screening, it is taken into account here for the Stage 4 and 5 Assessment.

Table 3-1 Embedded Mitigation for the Offshore Report to Inform Appropriate Assessment

Impact and Effect ID	Mitigation ID	Mitigation	Project Phase
Marine Mammal Embedded Mitigation			
PTS from UXO clearance	Co16 (tertiary mitigation)	Marine Mammal Mitigation Protocols (MMMP) for pile driving, geophysical surveys and UXO clearance (if needed) will be implemented. The mitigation measures will be informed by relevant guidance such as: - JNCC (2010): JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys; - JNCC (2010): JNCC guidelines for minimising the risk of injury to marine mammals from using explosives; and - JNCC (2017): JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys. UXO MMMP to ensure the risk of auditory injury (PTS) from UXO clearance is reduced. Piling MMMP to ensure the risk of auditory injury (PTS) from piling of anchors is reduced. Decommissioning MMMP to ensure the risk of auditory injury (PTS) from decommissioning activities is reduced.	Construction
PTS from pile driven anchors			Construction
PTS from decommissioning activities			Decommissioning
Entanglement risk	Co17 (tertiary mitigation)	Mooring lines and floating dynamic inter-array cables will be inspected according to the maintenance plan to confirm the structural integrity of the cable systems using a risk-based adaptive management approach. During these inspections, the presence of discarded fishing gear will be evaluated for entanglement risk and appropriate actions taken to remove if deemed necessary.	Operation and Maintenance

Impact and Effect ID	Mitigation ID	Mitigation	Project Phase
Vessel collision and disturbance	Co11 (tertiary mitigation)	A Vessel Management Plan will be developed and include details of: - vessel routing to and from construction sites and ports, - vessel notifications including Notice to Mariners and Kingfisher Bulletin; and - code of conduct for vessel operators including for the purpose of reducing disturbance and collision with marine fauna.	All
EMF	Co14 (primary mitigation)	Avoidance of sensitive features during cable routing wherever practicable. Cables will be buried as the primary cable protection method, however other cable protection methods will be used where adequate burial cannot be achieved. A Cable Burial Risk Assessment (CBRA) will be completed to determine suitable cable protection measures, and will be implemented within relevant Project plans.	Operation and Maintenance
Offshore and Intertidal Ornithology Embedded Mitigation			
Disturbance (Vessel-related), Toxic Contamination, monitoring of EIA predictions	Co9 and Co10 (tertiary mitigation)	A Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan (OEMP), including a Marine Pollution Contingency Plan (MPCP) will be developed. Construction Environmental Management Plan (CEMP) will be developed and will include details of: - A Marine Pollution Contingency Plan (MPCP) to address the risks, methods and procedures to protect the Offshore Development Area from potential polluting events associated with the Salamander Project; - A chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; - A biosecurity plan (offshore) detailing how the risk of introduction and spread of invasive non-native species will be minimised; - Waste management and disposal arrangements; and - Protocol for management of Dropped Objects.	All phases

Impact and Effect ID	Mitigation ID	Mitigation	Project Phase
		Operational Environmental Management Plan (OEMP) will be developed and will include details of: - A Marine Pollution Contingency Plan (MPCP) to address the risks, methods and procedures to protect the Offshore Development Area from potential polluting events associated with the Salamander Project; and - Waste management and protection of the marine environment.	
Disturbance (Vessel-related)	Co11 (tertiary mitigation)	A Vessel Management Plan will be developed and include details of: - vessel routing to and from construction sites and ports, - vessel notifications including Notice to Mariners and Kingfisher Bulletin; and - code of conduct for vessel operators including for the purpose of reducing disturbance and collision with marine fauna.	All phases
Artificial Light	Co54 (tertiary mitigation)	Approval and implementation of a Lighting and Marking Plan (LMP) in agreement with the Civil Aviation Authority (CAA), which will set out specific requirements in terms of aviation lighting to be installed on the wind turbines, as required under Civil Aviation Publication (CAP) 764, CAA Policy and Guidelines on Wind Turbines (Version 6, February 2016) and will include details of: - Lights and their shape, colour and character; and - Notifications and Inspections.	All phases

4 The Project Alone Assessment for Benthic Ecology

4.1.1.1 HRA Stage 3 Screening did not identify any potential for LSE to an Annex I habitat and that conclusion was maintained following consultation (**Table 1-2**). No minor or negligible impacts were identified during the preparation of the EIAR or the Offshore RIAA.

4.1.1.2 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SAC in relation to Annex I benthic habitat features alone and therefore, subject to natural change, the designated sites will be maintained in the long term.

5 The Project Alone Assessment for Marine Mammals

5.1 Baseline Environment

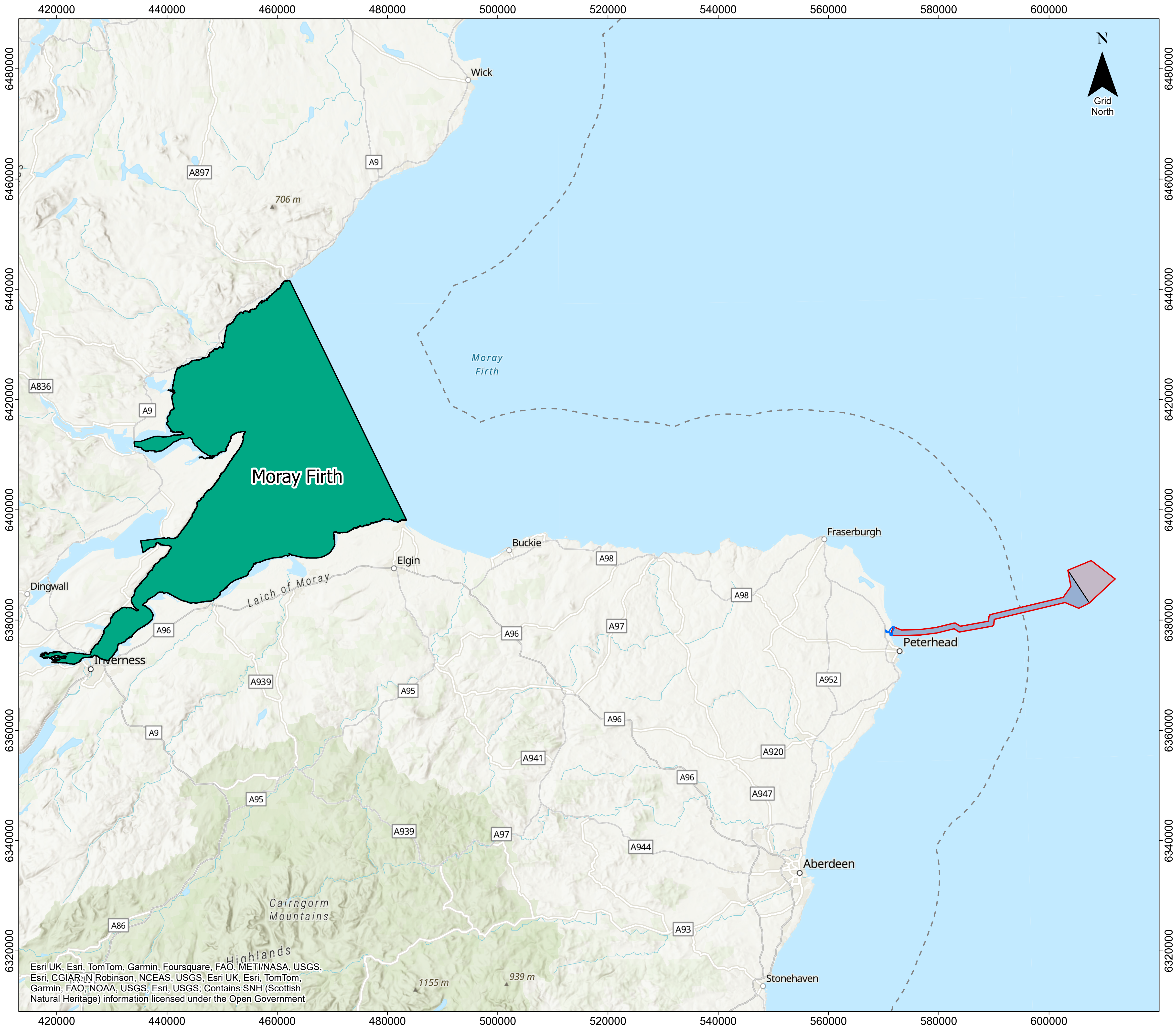
5.1.1.1 Baseline information for marine mammals in relation to the Salamander Project is provided in the relevant EIAR chapters and technical reports, as summarised in **Table 1-4**. Protected sites with marine mammals present as designated features which were considered in screening are detailed in in **Appendix A: Update to Stage 3 Screening for Assessment in Stages 4 and 5**.

5.1.1.2 The location of the Salamander Project relative to the single European site (bottlenose dolphin and the Moray Firth SAC) screened in for marine mammals is presented in **Figure 5-1**.

Salamander

Figure 5-1

Location of protected site screened in for marine mammals



Legend

- Offshore Development Area
- Offshore Array Area
- Offshore Export Cable Corridor
- Indicative Onshore Development Area
- 12 nm limit
- Moray Firth SAC

Coordinate System: WGS 1984 UTM Zone 30N

Vertical Datum : MLLW Scale @ A3 : 1:670,000

0 20 40 Kilometers

0 5 10 20 Nautical Miles

Rev	Description	Date
00	Final	23/01/2024
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Doc. Title : Location of protected site screened in for marine mammals
Doc. No : 81400281_008
Created by : JOSW
Checked by : SAKZ
Approved by : SAKZ

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5.2 Pressures Screened in for Marine Mammals

5.2.1.1 A number of pressures were screened into the marine mammal assessment (in **Appendix A: Update to Stage 3 Screening for Assessment in Stages 4 and 5**). These are listed in **Table 5-1**, and described in detail below.

Table 5-1 Pressures screened in for marine mammals

Pressure	Description	Assessment
Underwater noise	**5.2.2**	**5.3**
Entanglement	**5.2.3**	**5.4**
Collision	**5.2.4**	**5.5**
Electro-Magnetic Fields	**5.2.5**	**5.6**

5.2.2 Underwater Noise

5.2.2.1 Underwater noise is screened in for the Offshore Array Area and Offshore Export Cable Corridor (Offshore ECC) during all project phases: Construction; Operation & Maintenance; and Decommissioning. The elements of the Salamander Project Design Envelope relevant to the underwater noise assessment are identified in **Table 1-5** and include:

- Pre-construction and construction geophysical survey;
- UXO clearance (if required);
- Piling (if required);
- Other construction noise;
- Vessel disturbance;
- Operational noise; and
- Decommissioning activities.

5.2.2.2 The expected noise levels associated with these activities are described within the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) with respect to their potential to result in an auditory injury (permanent threshold shift or PTS) or disturbance to marine mammals, including bottlenose dolphin. Where the impact can be quantified, the EIAR considers the number of individual animals estimated to be at risk of PTS or disturbance, drawing on a combination of fixed distances (an Effective Deterrence Range or EDR) or modelled range (based on the conclusions of **Volume ER.A.4, Annex 4.1: Underwater Noise Modelling Report**) and knowledge of marine mammal density distributions. The assessment conclusions for bottlenose dolphin, taking into account the species' classification as a high frequency hearing group cetacean according to Southall *et al*. (2019), are drawn from the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) as summarised below in **Table 5-2.**

Table 5-2 Key Underwater Noise Assessment Conclusions for Bottlenose Dolphin

Sound Source	Estimated source pressure level (dB re 1 µPa) or Sound Exposure Level (dB re 1 µPa^2)	Expected Sound Frequency	Potential to result in PTS and/or disturbance (including mitigation where appropriate)
Construction (including pre-construction geophysical survey)			
Multi Beam Echo Sounder (MBES)	210 – 240 dB re 1 µPa (SPLpeak) for multiple beams (Lurton and Deruiter 2011)	210 – 240 dB re 1 µPa (SPLpeak) for multiple beams (Lurton and Deruiter 2011)	Above the hearing range of high frequency cetaceans. EIAR concluded risk of injury or disturbance to be negligible and not significant.
Side scan sonar (SSS)	210 dB re 1 µPa (SPLpeak) (Crocker and Fratantonio 2016, Crocker *et al*. 2019)	210 dB re 1 µPa (SPLpeak) (Crocker and Fratantonio 2016, Crocker *et al*. 2019)	
Sub bottom Profiler (SBP)	210 – 220 dB re 1 µPa (SPL_{peak}) (Hartley Anderson Ltd, 2020)	Frequency selectable. Typically 2 – 15kHz with a peak frequency of 3.5 kHz (Hartley Anderson Ltd, 2020)	Within hearing range of bottlenose dolphin, below the PTS onset threshold and therefore negligible and not significant risk of PTS. Risk of disturbance concluded in the EIAR to be localised and at most to elicit a temporary avoidance response in a small proportion of the population to the vessel, with the potential for impact concluded to be not significant.
Ultra-short baseline (USBL) positioning systems	187 – 206 dB re 1 µPa (SPLRMS) (Jiménez-Arranz *et al*. 2020)	187 – 206 dB re 1 µPa (SPLRMS) (Jiménez-Arranz *et al*. 2020)	
UXO Clearance (onset of PTS)	269.8-295.7 dB re 1 µPa @ 1 m (unweighted SPLpeak). 215.2-237.1 dB re 1 µPa2 @ 1 m (unweighted SELss).	Unstated	As the detailed pre-construction surveys have not yet been completed, it is not possible at this time to determine how many items (if any) of UXO will require clearance. Therefor UXO clearance would be subject to a separate Marine Licence, to be applied for post-consent, if required. The EIAR concluded that the primary acoustic energy resulting from UXO clearance is below the frequencies of greatest sensitivity for bottlenose dolphin, with any PTS (should it occur) unlikely to have

Sound Source	Estimated source pressure level (dB re 1 µPa) or Sound Exposure Level (dB re 1 µPa^2)	Expected Sound Frequency	Potential to result in PTS and/or disturbance (including mitigation where appropriate)
	For UXO ranging from low order (0.25 kg to 698 kg plus donor charge		significant consequences for vital rates. The predicted range for onset of PTS in bottlenose dolphin is 810 m (SPLpeak), with <1 animal (unmitigated) predicted to be affected. Mitigation (referenced in **Table 3-1)** would be applied in any UXO-MMMP to minimise the risk of PTS.
UXO Clearance (disturbance)			The EIAR applied three separate disturbance thresholds; 26 km, 5 km and TTS-onset. Noting that disturbance resulting from a one off explosion would not cause widespread or prolonged displacement. The number of bottlenose dolphin that may be disturbed per clearance was calculated to be up to 9 (26 km), 1 (5 km) or <1 (TTS-onset), with the EIAR concluding negligible and not significant.
Piling of Anchors (onset of PTS)	Presented through two modelled scenarios in **Volume ER.A.4, Annex 4.1 Underwater Noise Modelling Report**, based on hammer energy and with respect to instantaneous PTS (SPLpeak) and cumulative PTS (SELcum). Scenario 1 covers installation of 1 piled anchor in 1 day, with a maximum of 2,500 kJ hammer energy. Scenario 2 covers installation of 4 piled anchors in 1 day, with a maximum of 1,500 kJ hammer energy.		Modelled impact range predicted to be <50 m distance (SPLpeak) to <100 m distance (SELcum) and <1 individual in either case. Mitigation (**Table 3-1**) would be applied in the Piling-MMMP to minimise the risk of PTS.
Piling of Anchors (disturbance)	Presented through a number of modelled scenarios, firstly based on hammer energy and with respect to the number of animals that may be disturbed relative to each Management Unit (MU), secondly based on hammer energy and distance from the coast (the latter considered in the EIAR to be a more accurate reflection of bottlenose dolphin distribution within the Coastal East Scotland (CES) MU since they are known to be largely restricted to highly coastal waters).		Management Unit Approach (2,500 kJ) The number of animals that may be disturbed varied slightly with the modelled location, being 83 individuals at the western location (27 in CES MU, 56 in Greater North Sea (GNS) MU) to 84 individuals at the eastern location (25 in CES MU, 59 in GNS MU). Distance from Coast Approach (2,500 kJ) The number of animals that may be disturbed varied slightly with the modelled location, being 75

Sound Source	Estimated source pressure level (dB re 1 µPa) or Sound Exposure Level (dB re 1 µPa^2)	Expected Sound Frequency	Potential to result in PTS and/or disturbance (including mitigation where appropriate)
			individuals at the western location (12 within 2 km of the coast, 63 beyond 2 km of the coast) to 78 individuals at the eastern location (12 within 2 km of the coast, 66 beyond 2 km of the coast). Management Unit Approach (1,500 kJ) The number of animals that may be disturbed varied slightly with the modelled location, being 68 individuals at the western location (23 in CES MU, 45 in GNS MU) to 69 individuals at the eastern location (21 in CES MU, 48 in GNS MU). Distance from Coast Approach (1,500 kJ) The number of animals that may be disturbed varied slightly with the modelled location, being 63 individuals at the western location (11 within 2 km of the coast, 52 beyond 2 km of the coast) to 63 individuals at the eastern location (10 within 2 km of the coast, 53 beyond 2 km of the coast). iPCoD modelling was also undertaken to inform the EIAR, to understand the population consequences of disturbance. This investigated the consequence of piling disturbance on the population size and trajectory of the CES MU and the GNS MU. For both the unimpacted and impacted populations, fluctuations in population size are observed but, ultimately, the population is predicted to continue to increase over time and thus there are no long-term impacts to the population. The conclusion of the EIAR is of negligible and not significant.
Other construction activities	Dredging: SPL of 172-190 dB re 1 µPa @1m	45 Hz to 7 kHz ((Evans 1990, Thompson *et al*. 2009, Verboom 2014)	For bottlenose dolphins, hearing sensitivity below 1 kHz is relatively poor and thus it is expected that a PTS at this frequency would result in little impact to vital rates. Maximum impact range for onset of PTS for all these construction activities is <100 m.

Sound Source	Estimated source pressure level (dB re 1 µPa) or Sound Exposure Level (dB re 1 µPa²)	Expected Sound Frequency	Potential to result in PTS and/or disturbance (including mitigation where appropriate)
	Drilling: low frequency noise, fundamental frequency at 125 Hz (Nedwell *et al*. 2003)		Any disturbance impact will be primarily driven by the underwater noise generated by the vessel during non-piling construction-related activities, and, as such, it is expected that any impact of disturbance is highly localised (within 5 km). The short term and localised effect was defined as negligible and not significant in the EIAR.
	Cable laying: variable and dominated by vessel noise. In general, expected to have broadband source levels in the range 165-180 dB re 1µPa, with the majority of energy below 1 kHz (OSPAR 2009).		
	Trenching: At the North Hoyle OWF, trenching activities had a peak energy between 100 Hz – 1 kHz and in general the sound levels were generally only 10-15 dB above background levels (Nedwell *et al*. 2003).		
	Rock placement: underwater noise during rock placement is largely unknown but highly likely to be dominated by vessel noise.		
Vessel Disturbance	The EIAR provides various sound levels and frequencies for vessel noise, varying with vessel type, with frequency typically 10-100 Hz and the loudest noises (161-180 dB re 1 µPa as referenced in in **Volume ER.A.3, Chapter 11: Marine Mammals**) within 100 m of the vessel.		Disturbance to marine mammals by vessels will be driven by a combination of underwater noise and the physical presence of the vessel itself (e.g. Pirotta *et al*. 2015). It is not simple to disentangle these drivers and thus disturbance from vessels is assessed in the EIAR and here in general terms, covering disturbance driven by both vessel presence and underwater noise. Vessel disturbance can negatively affect bottlenose dolphin, with a review provided in the EIAR. Overall, the species was concluded to have a low sensitivity to vessel disturbance, with the magnitude of vessel disturbance assessed as low and the conclusion being negligible and not significant.
Operation and Maintenance			
Operational	Operational noise is expected to be similar between fixed and floating, with most noise generated above water where the mechanism is		The EIAR concluded that the primary acoustic energy resulting from an operational floating wind farm is

Sound Source	Estimated source pressure level (dB re 1 µPa) or Sound Exposure Level (dB re 1 µPa^2)	Expected Sound Frequency	Potential to result in PTS and/or disturbance (including mitigation where appropriate)
noise	comparable (Risch *et al*. 2023). For a floating wind farm, most of the acoustic energy is below 200 Hz, with sound levels recorded at 145.4 dB re 1 µPa at Kincardine and 148.8 dB re 1 µPa at Hywind Scotland (Risch *et al*. 2023). The cumulative contribution from a large array can result in changes to the soundscape (Tougaard *et al*. 2020), however the Salamander Project is not a large array.		below the frequencies of greatest sensitivity for bottlenose dolphin, with no potential for PTS. Operational noise at the Salamander Project is expected to be similar to those at Kincardine and Hywind, and although the EIAR found the potential for a reduced presence of harbour porpoise in close proximity to the WTG structures, the small scale nature and negligible impact of the Salamander Project and the negligible sensitivity of bottlenose dolphin to the type of operational noise associated with such projects resulted in a conclusion of negligible significance for bottlenose dolphin in the EIAR.
Decommissioning			
Decommissioning activities	The effects of underwater noise on marine mammals during decommissioning are considered to be no greater than those described for the Construction phase.		Mitigation (**Table 3-1**) would be applied in the Decommissioning-MMMP to minimise the risk of PTS. As the impacts of disturbance from vessels on marine mammals during decommissioning are considered to be no greater than those described for the Construction phase, it is conservative to assume that the potential for impact in decommissioning is synonymous with the potential for impact from construction activities.

5.2.2.3 In addition to the potential for a direct impact to bottlenose dolphin from underwater noise, there is potential for an indirect impact through an impact on prey, which is described in the EIAR (**Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology,** Section 10.11). With respect to fish, the EIAR concluded at most a negligible to minor significance, which was not significant in EIA terms.

5.2.3 Entanglement

5.2.3.1 Entanglement is screened in for the Offshore Array Area during the O&M phases only. The Project Design Envelope elements that may result in entanglement are identified in **Table 1-5**. Of the four different indicative mooring system configurations within the Project Description (**Volume ER.A.2, Chapter 4: Project Description**), catenary moorings are considered to present the highest risk of entanglement and are therefore considered as the worst case for assessment in the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) and also here.

5.2.3.2 The Salamander Project will require mooring lines and anchors to maintain the position of the WTGs within the Offshore Array Area. In addition to the seabed cables typical for a fixed bottom wind farm, as a floating wind farm the Salamander Project will require 'dynamic cables' within the water column, as part of the inter-array cables and to allow movement with both the water current and the floating structures to which they are attached. The introduction of these mooring lines, anchors and cables into the marine environment has the potential to increase risk of entanglement and thus injury for marine mammal species. Such entanglement is defined as primary (direct entanglement with a mooring line or cable) and secondary (entanglement in material 'snagged' on mooring lines or cables, such as discarded fishing gear).

5.2.3.3 The risks of entanglement of marine mammals within marine renewable technology structures is dependent upon both the physical characteristics of the mooring lines themselves (Harnois *et al*. 2015), and the amount of dynamic cable that persists in the water column. For example, mooring configurations which have taut mooring lines are likely to present a lower risk of entanglement for marine mammals than catenary systems due to the greater tension in the mooring line (Benjamins *et al*. 2014, Harnois *et al*. 2015). Similarly, developments with shorter lengths of dynamic cable are also likely to present lower risks of entanglement. Depending on the number of new mooring lines and the length of dynamic cable present in the water column, the risks of derelict fishing gear being caught within marine renewable energy structures can also increase. It should be noted that the EIAR considered entanglement risk for all marine mammals, including baleen whales where the risk is greater than for smaller species of marine mammal (Benjamins *et al*, 2014).

5.2.3.4 The EIAR concluded that the sensitivity of marine mammals to the pressure is high, and for primary entanglement a negligible magnitude and significance of effect. For secondary entanglement, the conclusion is of minor significance of effect. Inspection of mooring lines and cables will occur and presence of discarded fishing gear will be identified with removal undertaken if necessary, implemented as mitigation in **Table 3-1**.

5.2.4 Collision

5.2.4.1 Collision is screened in with respect to collision with floating WTGs within the Offshore Array Area during the O&M phase only. The Project Design Envelope elements that may result in collision are identified in **Table 1-5**. The EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) notes that although vessel collision (screened out of the HRA (SBES, 2023a) and Scoped out of the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**)) has been subject to considerable attention, for impact assessment of renewable energy projects much of the recent research has focused on tidal turbines (Copping *et al*. 2020a, Copping *et al*. 2020b, Garavelli 2020). No collisions of marine mammals have ever been observed with tidal turbines or other marine renewable energy infrastructure (such as monopiles) (Copping *et al*. 2020a); nonetheless, as the development of floating offshore wind farm technology increases, there is a need to assess the possibility of marine mammal collisions with these new offshore floating WTG substructures.

5.2.4.2 The risks of marine mammals colliding with floating WTG substructures is likely based on the individual's ability to perceive newly introduced infrastructure and the individual's behaviour within a new development area. In addition, the risks of marine mammals colliding with floating WTG substructures could also be species dependent. An echolocating odontocete such as bottlenose dolphin uses the echoes of their outgoing sounds to locate and identify objects in their path (Brinkløv *et al*. 2022). Various experiments have shown that dolphins and porpoises can perform complex biosonar target discrimination tasks of man-made objects (Au and Hastings 2008) and have the ability to discriminate between prey items based on the returning echoes of their echolocation clicks (Au *et al*. 2009, Yovel and Au 2010).

5.2.4.3 The EIAR concluded that the sensitivity of dolphins to the pressure and the magnitude of the pressure is negligible, resulting in a conclusion of negligible significance impacts.

5.2.5 Electro-Magnetic Fields

5.2.5.1 Electro-magnetic field (EMF) effects were screened in with respect to indirect impacts on marine mammals via effects on prey species within the Offshore Array Area during the Operation & Maintenance phase only. There is the potential for EMF to impact fish species within the immediate vicinity of the dynamic cables within the Offshore Array Area, and as marine mammals are dependent on fish as prey species it is important to assess any changes in abundance and/or distribution.

5.2.5.2 Whilst certain species may comprise the main part of their diet, bottlenose dolphin are understood to be generalist feeders (**Volume ER.A.3, Chapter 11: Marine Mammals**) and as such not reliant on any single prey species.

5.2.5.3 Potential impacts of EMFs on fish and shellfish species have been assessed in the EIAR (**Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology**) with a conclusion of negligible significance, which is not significant in EIA terms.

5.3 Assessment for Marine Mammals and Underwater Noise

5.3.1 Assessment Summary

5.3.1.1 The assessment for marine mammals and underwater noise is presented below in **Table 5-3**, to provide a clear documentation of the assessment for the single SAC and feature screened in, in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. Where additional information is required to support the assessment and conclusions presented here, It is referenced where relevant within the table and provided below.

Table 5-3 Consideration of the potential for an adverse effect alone for marine mammals with respect to underwater noise

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion for the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
No	89 km from Landfall, 120 km from OAA.	Yes	Site is within the precautionary 200 km ZoI used for assessment. Underwater noise ZoI may overlap with the SAC boundary, individual animals may travel outside the SAC boundary and interact with the ZoI, vessels may transit through the SAC.	Marine Mammal Mitigation Protocols (MMMP) for pile driving, geophysical surveys and UXO clearance (if needed) will be implemented. The mitigation measures will be informed by relevant guidance such as: JNCC (2010): JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys. JNCC (2010): JNCC guidelines for minimising the risk of injury to marine mammals from using explosives	**The population of bottlenose dolphin are a viable component of the site** Relevant site management[11] identifies incidental killing and injury as relevant to this conservation objective. The inclusion of the relevant MMMPs as mitigation will ensure the risk of PTS onset is minimised and therefore will not result in an AEOI. No further information required to demonstrate that the conservation objective will be maintained. **The distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance** Potential for disturbance from MBES, SSS, USBL, SBP, other construction activities, vessel disturbance, operational noise and decommissioning noise is negligible, short term (excepting that operational noise that will last for the project duration but will remain negligible in significance) and localised, and insufficient to result in an AEOI. No further information required to demonstrate that the conservation objective will be maintained. Given the potential for disturbance to result, further consideration to disturbance from UXO clearance and piling of anchors with respect to the conservation objective is provided in **Section 5.3.2** to support the conclusion of no AEOI.

[11] https://apps.snh.gov.uk/sitelink-api/v1/sites/8327/documents/59

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion for the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
				JNCC (2017): JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys. UXO MMMP to ensure the risk of auditory injury (PTS) from UXO clearance is reduced. Piling MMMP to ensure the risk of auditory injury (PTS) from piling of anchors is reduced. Decommissioning MMMP to ensure the risk of auditory injury (PTS) from decommissioning activities.	**The supporting habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin are maintained** Underwater noise will not result in a direct impact to the supporting habitats and processes relevant to bottlenose dolphin, but could have an indirect impact on prey species. However, the EIAR concluded both the sensitivity of marine mammals and the magnitude of any potential impact to be low, deemed not significant in EIA terms. Combined with the wide foraging area available for bottlenose dolphin, it is concluded that the indirect impact will therefore will not result in an AEOI. No further information required to demonstrate that the conservation objective will be maintained.

5.3.2 Supporting Information for Marine Mammals and Underwater Noise

5.3.2.1 The supporting information presented here relates to the conservation objective 'the distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance' only, with all other conservation objectives addressed in full in **Table 5-3**. The potential for underwater noise during UXO clearance or piling of anchors at the Salamander Project to result in a significant disturbance of bottlenose dolphin is considered within the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**). The potential impacts of the clearance of UXOs are discussed within this report for completeness. However, as it is not possible at this time to precisely define the number of UXO which may require detonation, a separate Marine Licence application and EPS Licence application (with associated environmental assessments) will be submitted for the detonation of any UXO which may be identified as requiring clearance in pre-construction surveys.

5.3.2.2 It is of note that all such underwater noise considered here will occur outside, and some distance from, the Moray Firth SAC, with the range of effect being insufficient to extend as far as the SAC itself (for example a distance of up to 26 km for UXO clearance was considered in the EIAR, with Figures 11-13 and 11-14 in the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) demonstrating that the noise levels from piling of anchors at the SAC will be 120-125 SEL_{SS} dB re $1uPA^2$ (and therefore indistinguishable from ambient). There would therefore be no significant disturbance within the SAC itself and no impact on the distribution of bottlenose dolphin throughout the site. The potential for significant disturbance to occur outside the SAC boundary is discussed below.

5.3.2.3 For UXO clearance, the number of individual bottlenose dolphin predicted to be disturbed varies with the approach to the assessment, ranging between <1 (TTS onset), 1 (5 km EDR) to 9 (26 km EDR). The JNCC Data Form identifies a SAC population size of 101-250 individuals (JNCC, 2015)[12], with the Conservation and Management Advice[13] noting that 'the population of the Moray Firth…taken as being equivalent to that of the CES Management Unit'. The CES MU has a population of 224 individuals (IAMMWG, 2023). Disturbance of, at most, 9 individual bottlenose dolphin represents disturbance to 4.02% of the CES MU population. It is important to note that the number of bottlenose dolphins for the CES MU population have generally increased since 2009 (Cheney *et al*. 2012, Cheney *et al*. 2013, Cheney *et al*. 2014a, Arso Civil *et al*. 2021). Trends of increasing abundance have been identified both within the Moray Firth (Cheney *et al*. 2013, Cheney *et al*. 2014b, Quick *et al*. 2014, Cheney *et al*. 2018) and Tay Estuary (Quick *et al*. 2014, Arso Civil *et al*. 2018, Arso Civil *et al*. 2019, Arso Civil *et al*. 2021) areas of the CES MU. These trends are expected to continue, and thus it is predicted that the population size of bottlenose dolphins within the CES MU shall continue to increase (Arso Civil *et al*. 2021).

5.3.2.4 The 26 km EDR is based on a high-order detonation of UXO; however, there is no empirical evidence of marine mammal avoidance of such events. While a startle response and short term behavioural response is likely, prolonged displacement is not expected. The EIAR concluded, for all approaches, that the 'consequence of the impact is therefore short-term and intermittent with temporary behavioural effects that are very unlikely to alter survival and reproductive rates to the extent that the population trajectory would be altered'. In addition, as noted in the EIAR 'it is expected that going forward, most, if not all, UXO clearance will be conducted using low-order deflagration techniques, and therefore disturbance impacts will be minimal, highly localised and over an extremely short duration'. It is therefore concluded that the

[12] https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0019808.pdf
[13] https://apps.snh.gov.uk/sitelink-api/v1/sites/8327/documents/59

potential for disturbance following UXO clearance would not be sufficient to result in a change in distribution of bottlenose dolphin throughout the site and therefore will not result in an AEOI to bottlenose dolphin.

5.3.2.5 For piling of anchors, the EIAR (**Volume ER.A.3, Chapter 11 Marine Mammals**) notes evidence of displacement or avoidance by bottlenose dolphin in response to underwater noise, with a small effect reported in response to underwater piling in the Cromarty Firth (Graham *et al*. 2017). There is the potential for such disturbance and displacement to affect individual behaviour, but the EIAR notes that it is not expected that this would result in an overall change in individual energy budget since animals have been shown to compensate for time lost due to disturbance.

5.3.2.6 The iPCoD model is a framework used to predict the population consequences of a predicted amount of disturbance (or PTS) resulting from piling and has been applied in the EIAR. The model allows an understanding of the potential future population level consequences of predicted behavioural responses (and auditory injury). With respect to the appropriate bottlenose dolphin density estimates, two different approaches were applied:

- The Management Unit Approach - the impact contours for behaviour and disturbance were split such that the area of the contours within the CES MU assumed a density of 0.01 dolphins/km^2, while the portion of the impact contour located in the Greater North Sea (GNS) MU assumed a density of 0.003 dolphins/km^2.
- The Distance from Coast Approach - the impact contours were split such that the area of the contours within 2 km of the mainland coastline assumed a density of 0.11 dolphins/km^2, while the rest of the contour assumed a density of 0.003 dolphins/km^2.

5.3.2.7 The second approach is considered to be a more accurate reflection of bottlenose dolphin distribution within the CES MU (and therefore the mainly coastal animals associated with the Moray Firth SAC) since they are known to be largely restricted to highly coastal waters. Specifically, as noted in the EIAR it has been reported that, outside of the Moray Firth (in both Tayside and Fife, and between Montrose and Aberdeen), bottlenose dolphins are encountered more often in waters less than 20 m deep and within 2 km of the coast (Quick *et al*. 2014). Therefore, a 2 km buffer from the coast was created for the mainland Scotland part of the CES MU, and it was assumed that bottlenose dolphins were uniformly spread within this area. This results in a uniform density estimate of 0.110 dolphins/km^2 within 2 km from the mainland coast in the CES MU.

5.3.2.8 The number of animals in the CES MU that may be disturbed is predicted to be highest for the 2,500 kJ hammer energy, being 12 individuals (distance from coast approach) to up to 27 animals (MU approach). The iPCoD model was used to predict whether this level of disturbance would result in a population level impact, and applied a worst case piling schedule (single year of construction, with 80 piling days total). The impacts from the other two piling schedules would be the same or lower since they consist of fewer piling days.

5.3.2.9 For each of the piling schedules, the results of the iPCoD modelling indicate that there is no effect of disturbance resulting from the Salamander Project on the projected increasing population size and trajectory of the bottlenose dolphins in the CES MU. For both the unimpacted and impacted populations, fluctuations in population size are observed but, ultimately, the population is predicted to continue to increase over time and thus there are no long-term impacts to the population. The same conclusion is drawn for the GNS MU. The impact is therefore short term with full rapid recovery expected to result in imperceptible changes to the receptor population and therefore the distribution of bottlenose dolphin throughout the Moray Firth SAC will be maintained with no adverse effect to bottlenose dolphin with respect to anchor piling at the Salamander Project.

5.3.3 Conclusion for Marine Mammals and Underwater Noise

5.3.3.1 In reference to **Table 5-3** and **Section 5.3.2**, it can be concluded that there is, therefore, no potential for an AEOI to the conservation objectives of the Moray Firth SAC alone and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to underwater noise.

5.4 Assessment for Marine Mammals and Entanglement

5.4.1 Assessment Summary

5.4.1.1 The assessment for marine mammals and entanglement is presented below in **Table 5-4**, to provide a clear documentation of the assessment for the single SAC and feature screened in, in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. Where additional information is required to support the assessment and conclusions presented here, it is referenced where relevant within the table and provided below.

Table 5-4 Consideration of the potential for an adverse effect alone for marine mammals with respect to entanglement

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
No	89 km from Landfall, 120 km from OAA.	Yes	Site is within the precautionary 200 km ZoI used for assessment. Pressure limited to the Array Area but individual animals may travel outside the SAC boundary and within the Array Area.	Mooring lines and dynamic floating inter-array cables will be inspected according to the maintenance plan to confirm the structural integrity of the cable systems using a risk-based adaptive management approach. During these inspections, the presence of marine debris and occurrence of discarded fishing gear will be evaluated for marine mammal entanglement risk and appropriate actions taken to remove if deemed necessary.	**The population of bottlenose dolphin are a viable component of the site** Relevant site management[11] identifies incidental killing and injury as relevant to this conservation objective. Should a bottlenose dolphin become entangled, there is a risk of death for that individual. Given the potential for entanglement to result, further consideration to the risk of mortality resulting from entanglement is provided in **Section 5.4.2.** **The distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance** Risk of entanglement is addressed through the 'viable component' objective and is not a contributor to any potential disturbance to bottlenose dolphin from the Moray Firth SAC. No further information required to demonstrate that the conservation objective will be maintained. **The supporting habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin are maintained** The risk of entanglement is not a contributor to any impact on the supporting habitats and processes relevant to bottlenose dolphin from the Moray Firth SAC. The EIAR concluded that any risk to prey availability resulting from entanglement with ghost fishing has a negligible magnitude and significance, deemed not significant in EIA terms. Combined with the wide foraging area available

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
					for bottlenose dolphin, it is concluded that the indirect impact will therefore will not result in an AEOI. No further information required to demonstrate that the conservation objective will be maintained.

5.4.2 Supporting Information for Marine Mammals and Entanglement

5.4.2.1 The supporting information presented here only relates to the conservation objective 'the population of bottlenose dolphin are a viable component of the site', with all other conservation objectives addressed in full in **Table 5-4**. The potential for entanglement (primary and secondary) at the Offshore Array Area to result in injury or death in marine mammals (relevant to the conservation objective viability being considered in more detail here) is considered within the EIAR **Volume ER.A.3, Chapter 11 Marine Mammals**. It is of note that the risk is wholly outside, and some distance from, the Moray Firth SAC, with the potential to affect the viability of bottlenose dolphin within the site linked to a change in the local population.

5.4.2.2 The potential for direct entanglement is considered in the EIAR with respect to both the mooring lines and the dynamic cable. Even for catenary moorings, which are assumed to pose a greater risk relative to other designs, the tension in the lines is too great to allow any loops to develop (Benjamins *et al*. 2014, Harnois *et al*. 2015, Copping *et al*. 2020a, Garavelli 2020), with the dynamic cable designed to withstand mechanical forces to prevent cable failure and the creation of loops within the system (Young *et al*. 2018). Therefore, the mooring lines and dynamic cable are considered to represent a negligible risk of primary entanglement.

5.4.2.3 As the Salamander Project will be utilising large diameter chains and/or ropes to create the mooring system, it is likely that the risks of secondary entanglement in derelict fishing gear may be greater than those associated with primary entanglement in the mooring lines themselves. Such a risk is difficult to quantify, as it is highly influenced by the prevalence of derelict fishing gear and environmental conditions at the time (Stelfox *et al*. 2016). If derelict fishing gears become caught on floating offshore wind mooring lines and dynamic cables, the risk of marine mammal entanglement then becomes dependent upon the characteristics of the gear itself (Winn *et al*. 2008, Wood and Carter 2008, Northridge *et al*. 2010, Benjamins *et al*. 2014, Knowlton *et al*. 2015, Stelfox *et al*. 2016). For example, in Scotland, the most frequent type of entanglement involves long lengths of 10-15 mm diameter polypropylene ropes (which are rarely under tension), such as those used in creel fishing (MacLennan *et al*. 2021).

5.4.2.4 Although the risks of secondary entanglement are greater than that of primary entanglement, as a part of the embedded mitigations, mooring lines and dynamic floating inter-array cables will be inspected according to the maintenance plan to confirm the structural integrity of the cable systems using a risk-based adaptive management approach. During these inspections, the presence of marine debris and occurrence of derelict fishing gear will be evaluated for marine mammal entanglement risk and appropriate actions taken to remove if deemed necessary.

5.4.2.5 Overall, the EIAR concluded the significance of impact to be negligible for primary entanglement and minor for indirect entanglement, both of which are not significant in EIA terms. That conclusion is drawn for all marine mammals and not just bottlenose dolphin, with the assessment highlighting the greater vulnerability of the larger baleen whale species and the lower risk for small species including dolphins, porpoise and seal.

5.4.2.6 The risk of primary or secondary entanglement for bottlenose dolphin at the Offshore Array Area is therefore negligible (for primary entanglement) to low (for secondary entanglement), with mitigation proposed to confirm that risk including implementation of action to remove debris that may result in secondary entanglement if deemed necessary. The Salamander Project will therefore not have an AEOI on the viability of bottlenose dolphin as a component of the Moray Firth SAC.

5.4.3 Conclusion for Marine Mammals and Entanglement

5.4.3.1 In reference to **Table 5-4** and **Section 5.4.2**, it can be concluded that there is, therefore, no potential for an AEOI to the conservation objectives of the Moray Firth SAC alone and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to entanglement.

5.5 Assessment for Marine Mammals and Collision

5.5.1 Assessment Summary

5.5.1.1 The assessment for marine mammals and collision is presented below in **Table 5-5**, to provide a clear documentation of the assessment for the single SAC and feature screened in, in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**.

Table 5-5 Consideration of the potential for an adverse effect alone for marine mammals with respect to collision

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
No	89 km from Landfall, 120 km from OAA.	Yes	Site is within the precautionary 200 km ZoI used for assessment. Pressure limited to the Array Area but individual animals may travel outside the SAC boundary and within the Array Area.	No mitigation specific for collision with WTGs.	**The population of bottlenose dolphin are a viable component of the site** Relevant site management[11] identifies incidental killing and injury as relevant to this conservation objective. Should a bottlenose dolphin have a collision with a WTG, there is a risk of injury or death for that individual. However, as noted in **Section 5.2.4** dolphin species including bottlenose dolphin have the ability to perceive newly introduced infrastructure into the marine landscape, with no document incident of collision between a marine mammal and a tidal turbine or other marine renewable energy infrastructure (such as monopiles). As such, dolphins are unlikely to collide with newly introduced floating WTG substructures at the sea surface and sustain injuries, with the EIAR concluding a sensitivity and magnitude of negligible.. With respect to the viability of the bottlenose dolphin in the Moray Firth SAC, no adverse effect will result from the Salamander Project in relation to risk of collision with the WTGs. No further information required to demonstrate that the conservation objective will be maintained. **The distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance** Risk of collision with WTGs is addressed through the 'viable component' objective and is not a contributor to any potential disturbance to bottlenose dolphin from the Moray Firth SAC. No further information required to demonstrate that the conservation objective will be maintained. **The supporting habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin are maintained**

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
					The risk of collision with WTGs is not a contributor to any impact on the habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin from the Moray Firth SAC. No further information required to demonstrate that the conservation objective will be maintained.

5.5.2 Conclusion for Marine Mammals and Collision

5.5.2.1 In reference to **Table 5-5,** it can be concluded that there is, therefore, no potential for an AEOI to the conservation objectives of the Moray Firth SAC alone and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to collision with the WTGs.

5.6 Assessment for Marine Mammals and Electro-Magnetic Fields

5.6.1 Assessment Summary

5.6.1.1 The assessment for marine mammals and EMF is presented below in **Table 5-6,** to provide a clear documentation of the assessment for the single SAC and feature screened in, in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**.

Table 5-6 Consideration of the potential for an adverse effect alone for marine mammals with respect to Electro Magnetic Frequency

Is there Direct Overlap between the Salamander Project and the Site?		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin					
No	89 km from Landfall, 120 km from OAA	Yes	Site is outwith the ZoI used for assessment, but has been included in alignment with NatureScot advice (see **Table 1-2**).	Cables will be buried as the primary cable protection method, however other cable protection methods will be used where adequate burial cannot be achieved. A Cable Burial Risk Assessment (CBRA) will be completed to determine suitable cable protection measures, and will be implemented within relevant Project plans.	**The population of bottlenose dolphin are a viable component of the site** Relevant site management[11] identifies incidental killing and injury as relevant to this conservation objective. There is no pathway for EMF from dynamic cables to injure or kill bottlenose dolphins. Risk of reduction of prey availability due to EMF impacts on prey species is addressed through the 'supporting habitats and processes' objective, and will not contribute to any potential adverse effect on the viability of the bottlenose dolphin population in the Moray Firth SAC. No further information is required to demonstrate that the conservation objective will be maintained. **The distribution of bottlenose dolphin throughout the site is maintained by avoiding significant disturbance.** EMFs are emitted along the lengths of subsea cables and may have behavioural or physiological effects on sensitive marine mammals. Existing evidence suggests that the levels of EMFs emitted by offshore renewable energy export cables are at a level low enough that there is no potential for direct significant impacts on marine mammals (Copping and Hemery, 2020).Risk of reduction of prey availability due to EMF impacts on prey species is addressed through the 'supporting habitats and processes' objective, and will not contribute to any potential disturbance to bottlenose dolphin population from the Moray Firth SAC. No further information required to demonstrate that the conservation objective will be maintained.

Is there Direct Overlap between the Salamander Project and the Site?	Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?	Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Moray Firth SAC – bottlenose dolphin			
			The supporting habitats and processes relevant to bottlenose dolphin and the availability of prey for bottlenose dolphin are maintained. Should EMF from dynamic cables result in a negative impact on prey species abundance and/or distribution, there is a risk to the maintenance of prey availability for bottlenose dolphin. However, as noted in **Section 5.2.5**, bottlenose dolphins are generalist feeders and as such are not reliant on a single prey species. The EIAR therefore concluded a low sensitivity to changes in prey abundance and distribution. The EIAR additionally concluded overall adverse impacts to fish species from EMF to be negligible, and thus also concluded the magnitude of impact for marine mammal species to be negligible. Therefore, with respect to the availability of prey for bottlenose dolphin from the Moray Firth SAC, no adverse effect will result from the Salamander Project in relation to EMF. No further information required to demonstrate that the conservation objective will be maintained.

5.6.2 Conclusion for Marine Mammals and Electro-Magnetic Fields

5.6.2.1 In reference to **Table 5-6**, it can be concluded that there is, therefore, no potential for an AEOI to the conservation objectives of the Moray Firth SAC alone and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to EMF.

5.7 Conclusion for Marine Mammals for the Project Alone

5.7.1.1 A summary of the conclusions for the marine mammal assessment for the Salamander Project alone is provided below in **Table 5-7**, including the potential for the pressure to contribute to an in-combination effect. Where that applies, the pressure is considered with other plans and projects in-combination in **Section 9.2**.

Table 5-7 Summary of the marine mammal assessment for the project alone

Site	Feature	Pressure	Conclusion	Inclusion in the In-combination Assessment?
Moray Firth SAC	Bottlenose dolphin	Underwater noise	**Risk of Injury (onset of PTS)** Where PTS may result from activities such as pile driving and UXO clearance, suitable mitigation will be put in place to minimise injury risk to marine mammals (as a requirement of European Protected Species legislation) and therefore there is no potential for adverse effect from the Salamander Project alone.	No contribution to any potential adverse effect in-combination
			Risk of Disturbance The majority of sources of underwater noise in Construction, Operation & Maintenance and Decommissioning are (at most) likely to result in a localised and temporary disturbance and therefore have no potential for an adverse effect alone or to make a measurable contribution to any potential adverse effect in-combination. While insufficient to represent an adverse effect alone, the Salamander Project has potential to contribute to an in-combination effect with respect to underwater noise, but limited to the Construction phase specifically and installation of anchors by piling.	An assessment of the potential impact from piling of anchors during the Construction phase in-combination is presented in **Section 9: The Project In-combination with other Plans and Projects Marine Mammal Assessment**.
		Entanglement	The design of the mooring system is such that the risk of direct entanglement of marine mammals is negligible, and although the risk of secondary entanglement cannot be quantified the inclusion of embedded mitigation resulted in a conclusion of low magnitude in the EIAR. Mitigation is proposed to confirm and (if appropriate) remove debris that may result in secondary entanglement risk. This supports a conclusion of no potential for an adverse effect from the Salamander Project alone.	The consequences for an individual animal (if it becomes entangled) mean the pressure is included in the in-combination assessment.
		Collision (with WTGs)		

Site	Feature	Pressure	Conclusion	Inclusion in the In-combination Assessment?
		Electro-magnetic fields (EMF)	No measurable contribution to any impact on bottlenose dolphin alone (and therefore there is no potential for adverse effect from the Salamander Project alone).	No measurable contribution to any in-combination effect

5.7.1.2 In reference to **Table 5-7**, it can therefore be concluded for the assessments of all relevant pressures that there is no potential for an AEOI to the conservation objectives of the Moray Firth SAC alone and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term. Where noted in **Table 5-7**, the project level effect is taken forward for assessment in-combination with other plans and projects in **Section 9**.

6 The Project Alone Assessment for Migratory Fish and Freshwater Pearl Mussel

6.1.1.1 The migratory fish receptor group includes freshwater pearl mussel (FWPM), a mollusc that occurs in rivers and streams but is included here in the Offshore HRA 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 Atlantic salmon (*Salmo salar*) could result in an indirect potential LSE for FWPM and the species is screened following the same principles as migratory fish. HRA Stage 3 Screening did not identify any potential for LSE to migratory fish and FWPM, and this conclusion was agreed with following consultation (**Table 1-2**). No relevant minor or negligible impacts were identified during the preparation of the EIAR or adverse effects during the preparation of the Offshore RIAA.

6.1.1.2 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SAC in relation to migratory fish or FWPM features alone and therefore, subject to natural change, the designated sites will be maintained in the long term.

7 The Project Alone Assessment for Ornithology

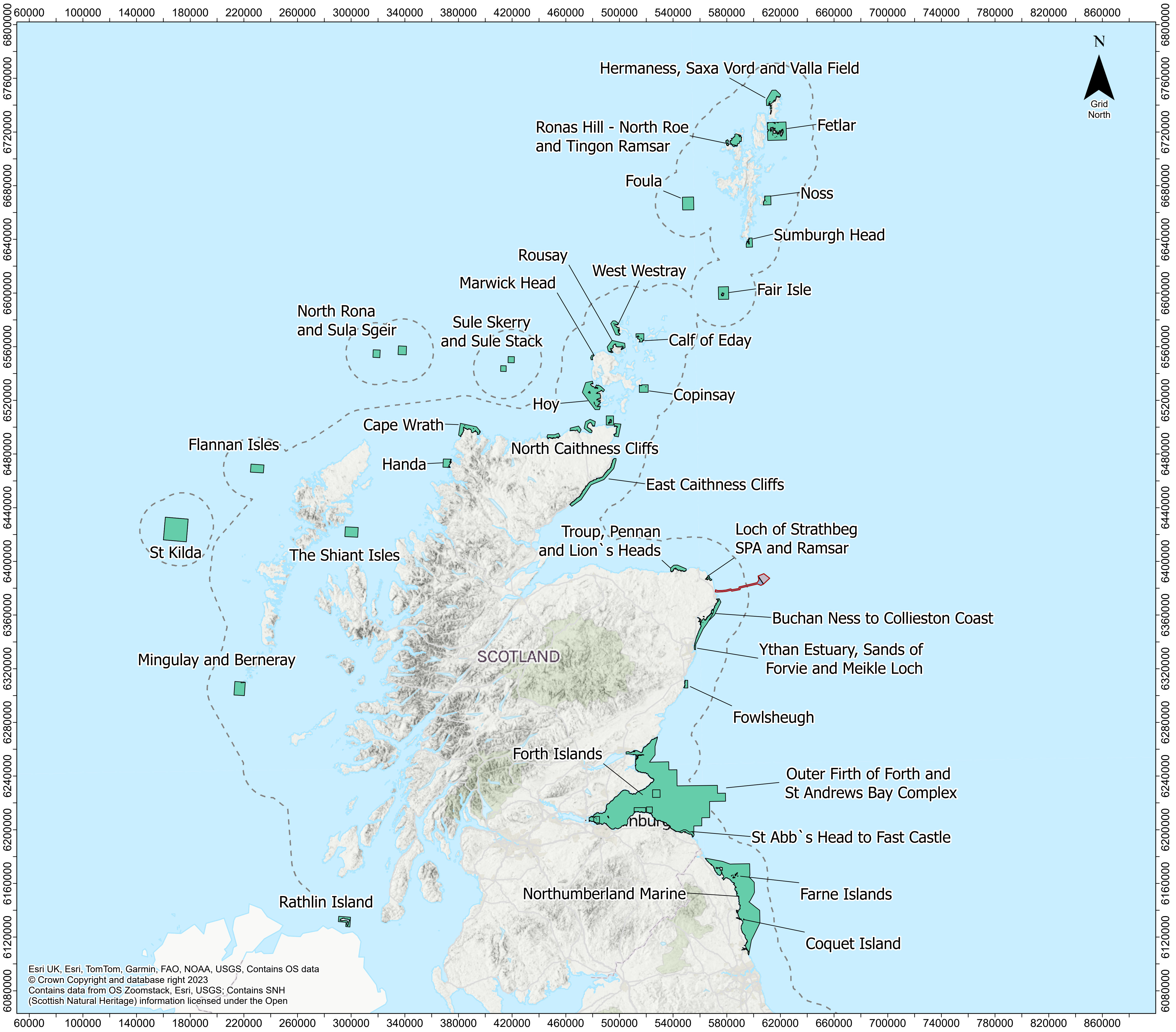
7.1 Baseline Environment

7.1.1.1 The information on the environmental baseline for ornithology is provided for the Salamander Project in the relevant EIAR chapters and technical reports, which are presented in **Table 1-4**. For ornithology, these include:

- **Volume ER.A.3, Chapter 12 Offshore and Intertidal Ornithology**
- **Volume ER.A.4, Annex 12.1 Offshore Ornithology Baseline Data Report**
- **Volume ER.A.4, Annex 12.3 Collision Risk Modelling Report**
- **Volume ER.A.4, Annex 12.4 Population Viability Analysis (PVA)**
- **Volume ER.A.4, Annex 12.5 Displacement Assessment**
- **Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**
- **Volume ER.A.4, Annex 12.8 Offshore Ornithology Regional Populations Report**
- **Volume ER.A.4, Annex 12.9 Cumulative Assessment Population Viability Analysis (PVA)**

7.1.1.2 Information on the designated sites is provided in Appendix B: Information on the Designated Sites Screened In.

7.1.1.3 **Figure 7-1** shows the location of the Salamander Project relative to the protected sites screened in for ornithology.



Salamander

Figure 7-1

Location of protected sites screened in for ornithology

Legend
- Offshore Development Area
- Offshore Array Area
- Offshore Export Cable Corridor
- 12 nm limit
- SPAs and Ramsar Sites

Coordinate System: WGS 1984 UTM Zone 30N
Vertical Datum : MLLW
Scale @ A3 : 1:2,750,000

0 80 160 Kilometers
0 20 40 80 Nautical Miles

Rev	Description	Date
00	First Issue	23/01/2024
01	Final	17/04/2024
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Doc. Title : Location of protected sites screened in for ornithology
Doc. No : 81400281_009
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Checked by : SAKZ
Approved by : SAKZ

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7.2 Pressures Screened in for Ornithology

7.2.1.1 A number of pressures were screened in for the ornithology assessment (**Appendix A: Update to Stage 3 Screening for Assessment in Stages 4 and 5**). These are listed in **Table 7-1**, and considered in turn below.

Table 7-1 Pressures screened in for ornithology

Pressure	Description	Assessment
Distributional response	**7.2.2**	**7.3**
Entanglement	**7.2.3**	**7.4**
Underwater noise	**7.2.4**	**7.5**
Above water noise	**7.2.5**	**7.6**
Toxic contamination	**7.2.6**	**7.7**
Light	**7.2.7**	**7.8**
Collision	**7.2.8**	**7.9**
Indirect physical impact	**7.2.9**	**7.10**
Suspended sediment	**7.2.10**	**7.11**

7.2.2 Distributional Response (visual disturbance/ displacement and barrier effects)

7.2.2.1 This pressure, referred to in Screening as Physical Presence, relates to the physical disturbance of birds and the displacement and / or barrier effect that could occur if birds avoid the area occupied by the Salamander Project during operation and or the vessels and activities involved during Construction / Operation / Decommissioning.

7.2.2.2 Distributional response is screened in for a number of sites and species, including within the Offshore Array Area and Offshore ECC during Construction and Decommissioning, from activities such as vessel movements, seabed preparation and cable laying. Distributional response is also screened in for a number of sites and species during operation & maintenance, as a result of a direct response to operational WTGs (restricted to the Offshore Array Area and relevant buffer), as well as maintenance activities, such as vessel movements (which can occur within the Offshore Array Area and Offshore ECC). Barrier effects could occur when the Salamander Project is operational, and will be restricted to the Offshore Array Area.

7.2.2.3 Distributional response can be temporary and short term (for example relating to construction activities or vessel movements associated with maintenance) or for the duration of the Salamander Project (for example the physical presence of the WTGs).

7.2.2.4 A distributional response may impact bird populations by affecting site usage which may be for foraging, resting or moulting purposes. As a result of a distributional response, an individual bird may experience a decrease in fitness, due to the effect of re-locating to alternative foraging grounds and or changes to energy budgets due to the increased energy expenditure when avoiding a wind farm. These impacts, in turn, may have indirect effects on birds in areas that may be some distance from the wind farm including reduced energy acquisition as a result of increased competition at other foraging sites which can result in further reductions in fitness affecting reproductive success. However, the Salamander Project consists of up to seven WTGs and is 8.7 km in width, so the avoidance of the Offshore Array Area would only lead to relatively minor increases in flight distance, when compared to the mean-maximum foraging ranges of the species in question.

7.2.2.5 Vulnerability to these pressures is species-specific; pressure vulnerability will be determined using the evidence provided in the relevant literature including Wade *et al*. (2016) and Bradbury *et al*. (2014). The assessment draws on the conclusions of the relevant technical reporting, specifically the following:

- **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**. This report is used to support the assessment as contextual information, with the assessment drawing on the matrix method for quantification of potential impact. The report includes distributional response assessments for kittiwake, guillemot, razorbill and puffin with respect to the Troup Pennan and Lion's Head SPA, Buchan Ness to Collieston Coast SPA, Fowlsheugh SPA and the East Caithness Cliffs SPA. The outputs provide modelled additional mortality (%) as a result of the presence of the Salamander Project.

- **Volume ER.A.4, Annex 12.5: Displacement Assessment**. The report presents the conclusions from the SeabORD and displacement matrices, with respect to kittiwake, guillemot, razorbill, puffin and gannet. The matrix method presented applied the joint SNCB interim guidance (JNCC *et al.*, 2022) and the displacement and mortality rates defined in NatureScot 2023h, to predict the number of birds which may die following distributional responses due to the presence of the Salamander Project. The matrix approach requires defined seasons, with these provided in **Table 7-2** and the displacement and mortality rates applied in assessment provided in **Table 7-3**.

- **Volume RP.A.2, Annex 1: Apportioning Report**. The report provides the information required to undertake apportioning of the distributional response outputs, to enable the consequences at colony level to be considered.

- **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**. Where the consequence of a distributional response meets the SNCB threshold, PVA is undertaken with the results presented in the PVA report.

7.2.2.6 The effect of distributional responses on puffin during the non-breeding season are not included, in line with NatureScot advice (**Table 1-2**).

Table 7-2 Defined easons of species being assessed for distributional responses

Species	Seasons as Defined in NatureScot (2020)	
	Breeding Season	Non-breeding Season
Kittiwake	mid Apr – Aug	Sep – mid Apr
Guillemot	Apr – mid Aug	mid Aug – Mar
Razorbill	Apr – mid Aug	mid Aug – Mar

Species	Seasons as Defined in NatureScot (2020)	
	Breeding Season	Non-breeding Season
Puffin	Apr – mid Aug	-
Gannet	mid Mar – Sep	Oct – mid Mar

7.2.2.7 The consequences of a distributional response can include displacement and potentially mortality, with percentage values applied for these. These are presented in **Table 7-3** in terms of the values defined in NatureScot (2023h) alongside values that represent the Applicant's approach. The Applicant's approach has been derived from the latest available literature and evidence together with guidance documents and consideration of the scale of the Salamander Project. It is understood that a position on some of that literature is pending from NatureScot (for example the Beatrice Year 2 monitoring data). Key points and supporting rationale for the Applicant's approach to the distributional response assessment are provided below.

Table 7-3 Distributional response and mortality rates included for consideration in assessment

Species	Distributional response and Mortality Rates as Defined in NatureScot (2023h)			The Applicant's Approach			
	% of Birds Displaced	Breeding Season Mortality	Non-breeding Season Mortality	% of Birds Displaced	Breeding Season Mortality	Post-breeding/ autumn migration Mortality	Non-breeding/Spring migration Mortality
Kittiwake	30%	1% and 3%	1% and 3%	30%	1%	N/A	1%
Guillemot	60%	3% and 5%	1% and 3%	50%	1%	1%	1%
Razorbill	60%	3% and 5%	1% and 3%	50%	1%	1%	1%
Puffin	60%	3% and 5%	N/A	50%	1%	N/A	N/A
Gannet	70%	1% and 3%	1% and 3%	70%	1%	N/A	1%

50% displacement and 1% mortality rates are applied for auk species in the Applicant's Approach.

7.2.2.8 In terms of distributional response, NatureScot recommends (NatureScot 2023h) that a 60% displacement rate is applied to auk species in both the breeding and non-breeding season (noting that apportioning is not required for puffin in the non-breeding season, as confirmed in **Table 1-2**). However, real-world displacement rates are variable. Considering the abundance of auks within the Offshore Array Area plus 2.0

km buffer, a 50% displacement rate is considered appropriate and (given the findings described below) precautionary for the Salamander Project to assess auk distributional responses. The assessment presents both approaches, with the conclusion drawn on the Applicants approach.

7.2.2.9 In terms of the mortality rate, NatureScot recommends (NatureScot 2023h) that a 1-3% mortality rate is applied to auk species in the non-breeding season and a 3-5% mortality rate in the breeding season (noting that apportioning is not required for puffin in the non-breeding season, as confirmed in **Table 1-2**). For the reasons outlined below, notably the scale of the Salamander Project and recent studies, the lower end of the recommended mortality rates is considered appropriate and therefore, a 1% mortality rate is applied for the assessment in all seasons.

7.2.2.10 The Applicant's approach is in line with many previous offshore wind farms (e.g. the recent Green Volt application (Green Volt, 2023)). The values are considered precautionary, especially in light of the recent publication of the Beatrice Year Two monitoring (Macarthur Green, 2023) and when taking into account the size of the Salamander Project (i.e. seven WTGs over 33.25 km^2). Evidence shows that auk species exhibit a medium level of sensitivity to vessel and helicopter traffic (Wade *et al*., 2016). Furthermore, distributional response impacts from post-consent monitoring studies (from 13 different European offshore wind farm sites) were collated and reviewed by Dierschke *et al*., (2016), which found auk species to show 'weak displacement' overall, but results were highly variable.

7.2.2.11 Since the UK Statutory Nature Conservation Bodies (SNCBs) published guidance on defining displacement rates for auks in 2017, a number of studies have been undertaken. This has included work by Searle *et al*. (2018), van Kooten *et al*. (2019), and work undertaken for the Hornsea Four Offshore Wind Farm (APEM, 2022), which suggest that the recommended rates are overly precautionary.

7.2.2.12 The Hornsea Four review (APEM 2022) summarised all post consent-monitoring studies undertaken to that date within UK waters and provides an extensive study and analysis of the empirical data from offshore wind farms. This review found that auk distributional response varies considerably across different sites, with distributional response rates ranging from +112% (i.e. attraction) to -75%. However, this review concluded that a displacement rate of 50% and mortality rate of 1% was appropriate for use in relation to distributional response assessments being undertaken for the Hornsea Four Offshore Wind Farm. The review suggests that in areas of high abundance, displacement is limited and postulates that this may be due to higher importance of the underlying habitat to birds, meaning birds are more likely to tolerate the presence of structures in the area. For areas with low abundance, displacement rates were increased, and the review postulates that this may be that birds are able to forage in other areas as competition between birds is reduced. Although greater than 50% displacement was observed at five developments in the study, all had very low densities of auks within the Study Area. Where auk density was greater, <50% distributional response was recorded. Of the wind farms included in the APEM study, those regarded as having a low abundance or density of auks tended to be non UK or southern North Sea UK projects. A value of >5 birds/km^2 is given for moderate to high density. Auk density at the Salamander Project is presented in a series of figures in **Volume ER.A.4, Annex 12.1 Offshore Ornithology Baseline Data Report**, and exceeds the medium to high density value for several months of the year for each auk species, supporting the use of <50% for a distributional response.

7.2.2.13 Most recently, Beatrice OWF (Macarthur Green 2023), a project located in the north east region of Scotland, published the results from the second year of post construction monitoring. The study utilised an approach investigating the distribution of seabirds in relation to turbine locations, which suggested that auk species did not avoid turbines. The abundance of both guillemot and razorbill increased significantly from the pre-construction period into the post-construction period. This would suggest that these species are not displaced by offshore wind farms and that even the use of a 50% distributional response rate, as suggested by APEM (2022) is highly precautionary. Specifically, for puffin that report concluded that the lower end of the 30-70% displacement rate to be appropriate for similarly located wind farms, for guillemot the report concluded that even the lower end of the 30-70% displacement rate range is probably precautionary, and for razorbill that the current 30-70% displacement rates are likely to over-estimate distributional response.

7.2.2.14 Outside the breeding season, auks are typically more widely dispersed and are not tied to a specific coastal site or colony (Camphuysen, 2002; Christie, 2021). With wider dispersal, pressure on individuals to forage in specific areas is lower, and thus distributional response is likely to result in lesser effects. That is particularly relevant in the post breeding period, when peaks in auk density were observed at the Salamander Project (**Volume ER.A.4, Annex 12.1 Offshore Ornithology Baseline Data Report**), and when parents with chicks are moving rapidly offshore. Furthermore, evidence suggests that although auk species are somewhat sensitive to distributional response, the effects are short-term, and studies indicate auk habituation to offshore wind farms. For example, a study at Thanet Offshore Wind Farm found auk species became habituated and the distributional response rate of 75% to 85% in the first year of operations fell to 31% to 41% within years two and three of operations (Royal Haskoning, 2013).

7.2.2.15 Further evidence is emerging through additional post-construction monitoring of offshore wind farms. For instance, there are reports of auk numbers increasing and observations of foraging behaviour within wind farm areas (Leopold and Verdaat, 2018). This suggests the distributional response rates of auk species within the Salamander Project will reduce over time, and, given that the site is close to other operational offshore wind farms (such as Beatrice, Moray East and Hywind), some habituation may have already occurred within local populations that would result in reduced avoidance of the Salamander Project compared to a new offshore wind farm in a previously unimpacted region.

7.2.2.16 With regards the mortality rates applied, the studies by Searle *et al*. (2018) and van Kooten *et al*. (2019) used individual based models and prey distributions to assess the effects of displacement on auks. The results indicated that breeding season mortality rates in displaced birds are likely to be in the region of 0.5% (Searle *et al*., 2018) to 1.0% (van Kooten *et al*., 2019). Outside the breeding season, auks are typically more widely dispersed and are not tied to a specific coastal site or colony (Camphuysen, 2002; Christie, 2021). With wider dispersal, pressure on individuals to forage in specific areas is lower, and thus displacement is likely to result in lesser effects. This is particularly relevant for a physically small project such as the Salamander Project, in the post breeding period, when peaks in auk density were observed at the Salamander Project Offshore Array Area, and when parents with chicks are moving rapidly offshore. A breeding and non-breeding season mortality of 1% is therefore deemed precautionary.

A 70% distributional response and 1% mortality is applied for gannets in the Applicant's Approach

7.2.2.17 In terms of distributional response, NatureScot recommends (NatureScot 2023h) that a 70% displacement rate is applied to gannet, with a 1-3% mortality in both the breeding and non-breeding season. The 70% displacement rate is applied in the Applicant's approach, with justification for a mortality rate of 1% provided below. It should be noted that earlier advice from NatureScot (and Marine Scotland Science) noted that the assessment of distributional response impacts on gannet is not required, based on work undertaken by Searle *et al.* (2014) that, although showing gannet were displaced by offshore wind farms, no population-level effects resulted.

7.2.2.18 Masden *et al*. (2010) assessed the energetic costs of distributional response in seabirds. Results suggest that increasing gannet flight distance by 2 km increases energetic cost by 1.25%. A 10 km increase may result in a 4.50% increase in energy expenditure. However, this is based on a foraging range of 160 km, where 10 km represents a 6.25% increase in distance flown. Scaling this to the mean maximum plus 1 SD foraging range of 709 km (Woodward *et al*., 2019), an additional flight distance of 10 km (4.5%) represents a scaled 1.02% increase in expenditure. This minimal increase in energy expenditure is unlikely to result in notable mortalities. Therefore, also considering the small spatial extent of the Salamander Project, the lower end of the NatureScot recommended (NatureScot 2023h) mortality rate (1%) is considered appropriate.

A 30% distributional response and 1% mortality is applied for kittiwake in the Applicant's Approach

7.2.2.19 In terms of distributional response, NatureScot recommends (NatureScot 2023h) that a 30% displacement rate is applied to kittiwake, with a 1-3% mortality in both the breeding and non-breeding season. The 30% displacement rate is applied in the Applicant's approach, with justification for a mortality rate of 1% provided below.

7.2.2.20 Prior to the current ScotWind and INTOG Rounds of east coast Scotland offshore wind applications and projects awaiting consent, Scottish Minister advice on EIA ornithological assessments for kittiwake distributional response (e.g. Marine Scotland, 2017) was for a distributional response rate of 30%, a mortality rate of 2% in the breeding season and a qualitative assessment only in the non-breeding season (in contrast to the advice in the same document from NatureScot (at that time SNH), which for kittiwake distributional response was 'that there was no need to include kittiwake, the data available from post construction monitoring indicates no significant avoidance behaviour by this species'). In the joint SNCBs (2022) updated and interim advice note on distributional response, kittiwake is not included in the 'more sensitive' category, scoring too low. In recent consented offshore wind farm projects in England, kittiwake are not typically included within an assessment of distributional response as a result of the low sensitivity of the species to the pressure (e.g. for Hornsea Four, kittiwake at Flamborough and Filey Coast SPA was assessed for collision only and not distributional response (Ørsted, 2022 and DESNZ, 2023[14]).

7.2.2.21 The low sensitivity of kittiwake to distributional response is supported by a number of post-construction studies of seabirds at offshore wind farms, which have concluded that kittiwake was one of the species hardly affected by distributional response (Dierschke *et al*., 2016). Most recently, the Beatrice Year Two monitoring report (Macarthur Green, 2023) found there was an overall increase in kittiwake abundance between 2015 and 2021, although this was not significant, with some areas of increase and some of decrease. In relation to turbine locations, kittiwake densities were variable in both survey years and overall slightly higher in 2021, but there was no indication of any significant responses, either avoidance or attraction in either year. For kittiwake, the report concluded 'neither of the pre vs post comparisons indicated any decreases across the wind farm'.

7.2.2.22 A 30% distributional response is therefore considered highly precautionary.

7.2.2.23 The 1% mortality value for kittiwake is also precautionary when considered alongside project level SeabORD modelling (**Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**), which modelled the difference in kittiwake mortality at four SPAs (Troup Pennan and Lion's Head SPA, Buchan Ness to Collieston Coast SPA, Fowlsheugh SPA and East Caithness Cliffs SPA). The difference in % mortality between the wind farm presence/absence scenarios was at most 0.007%. Further, the overall available kittiwake foraging area

[14] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-001686-Hornsea%20Project%20Four%20-%20Other-%20B2.2%20Report%20to%20Inform%20Appropriate%20Assessment%20Part%201.pdf and https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-002331-DESNZ%20HRA%20-%20Hornsea%20Four_Final.pdf

(Ruffino *et al*., 2023) clearly shows foraging across the region and a limited potential for overlap with the Salamander Project, with the Offshore Array Area itself representing a fraction of the total available foraging habitat. Therefore, any kittiwakes that are displaced from the Offshore Array Area will have access to an extensive alternative foraging area. The potential for a distributional response mortality to result in the non-breeding season, when kittiwake are not associated with a breeding colony, is even less. A mortality rate of 1% is therefore considered highly precautionary.

7.2.2.24 Mitigation to minimise the levels of disturbance and distributional response will be achieved by adhering to a Vessel Management Plan (VMP). The VMP will confirm the types and numbers of vessels that will be engaged on the Salamander Project and consider vessel coordination including indicative transit route planning. The VMP will reduce the spatial extent and magnitude of impact from disturbance and distributional response of construction and maintenance vessels.

7.2.2.25 **Volume ER.A.4, Annexes 12.5 Displacement Assessment** and **12.6 Displacement Assessment SeabORD** provide information on total impacts for the Salamander Project. For a HRA, it is necessary to 'apportion' the impact of a marine renewable site to multiple SPAs, with these identified through Screening (SBES, 2023a) and confirmed here in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. For the Salamander Project, the values applied in the apportioning are presented in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**. During the breeding season, a theoretical approach (developed by NatureScot (NatureScot, 2018)) has been applied to determine the proportion of birds from SPA sites which use proposed development areas in the breeding season. In the non-breeding period, the standard approach to apportioning that utilises the information presented in Furness (2015), is adopted. As referenced by NatureScot (in **Table 1-2**) in the breeding season an alternative apportioning tool can be applied for kittiwake, guillemot, razorbill and shag, referred to as the Butler Tool (Butler *et al*. 2020). However, the Butler tool requires an update (which is understood to be pending) before it can be applied with the recently updated colony count data[15] which itself is an update on the Seabird 2000 data. The apportioning undertaken here therefore applies the theoretical approach excluding the Butler Tool but inclusive of the updated colony count data and therefore provides the most up to date apportioning results for the Salamander Project.

7.2.2.26 Following apportioning, there is the potential requirement to undertake Population Viability Analysis. This requirement follows where the potential for impact could exceed a 0.02 percentage point increase to the baseline mortality (following NatureScot advice, as provided in their Scoping response[18] and referenced in **Volume ER.A.3, Chapter 12 Offshore and Intertidal Ornithology**). That advice was that the use of the Natural England PVA tool (Searle *et al*., 2019) is supported, with reference to the NatureScot Guidance Note 11 (where modelling is required over three time periods (25 years, 35 years (the lease period) and 50 years) (NatureScot (2023k)). While NatureScot apply a 0.02% threshold to determine the need for PVA, the assessment is presented as a narrative informed by the PVA outputs (which are presented in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**).

7.2.2.27 The potential for impact assessed within the RIAA then differs from the EIAR, for which the impact is determined at population level. At population level, the significance of impact resulting from a distributional response was determined to be negligible, being minor (at most) for guillemot.

[15] https://jncc.gov.uk/our-work/seabirds-count/

7.2.3 Entanglement

7.2.3.1 This pressure relates to the potential for diving seabirds to become entangled as a consequence of the Salamander Project. The pressure is screened in for the Offshore Array Area during the operational & maintenance phase only.

7.2.3.2 Entanglement is considered as primary entanglement (related to mooring lines associated with turbine infrastructure) and secondary entanglement (related to marine debris that itself becomes entangled in mooring lines. Primary entanglement is considered unlikely due to mooring lines consisting of thick components meaning small animals, such as birds, cannot physically become entangled (Benjamins *et al*., 2014). Natural Resources Wales have also previously stated that interactions between seabirds and the cables and mooring lines associated with floating offshore wind farms are of negligible importance (Aquaterra and MarineSpace, 2022). There is a greater risk of secondary entanglement compared to primary entanglement.

7.2.3.3 There is currently no clear guidance on how to assess the risk of seabird entanglement or how to monitor for an occurrence with respect to floating offshore wind. More data are available for marine mammals (see **Section 5.2.3**), with the risk of primary entanglement considered to be greater for larger animals (such as baleen whales) than small animals (with such small animals including species such as harbour seal, considerably larger than a diving seabird). Due to the physical characteristics of the cables and mooring lines, in the context of the size of diving birds and the lack of evidence for any such entanglement elsewhere, it is considered extremely unlikely that direct entanglement of seabirds will occur with respect to the Salamander Project.

7.2.3.4 Therefore, entanglement, with reference to seabirds, refers solely to secondary entanglement. Depending on the number of new mooring lines and the length of dynamic cable present in the water column, the risks of derelict fishing gear being caught within marine renewable energy structures can increase. Derelict fishing gear is a well-known cause of mortality in marine life, including in seabirds (e.g. Hyrenbach *et al*., 2020; Berón and Seco Pon, 2021); however, the degree of impact is dependent on the size and location of the gear. As the location of lost gear and the likelihood of it entering the Offshore Array Area at any point in time is difficult to determine, a worst-case scenario for this impact is difficult to establish. As such, mooring lines and dynamic floating inter-array cables will be inspected according to the maintenance plan to confirm the structural integrity of the cable systems using a risk-based adaptive management approach. During these inspections, the presence of marine debris and occurrence of discarded fishing gear will be evaluated for entanglement risk and appropriate actions taken to remove if deemed necessary.

7.2.3.5 The EIAR concluded the magnitude of secondary entanglement for seabirds to be negligible, with a sensitivity of low to medium (medium related to auks, which spend the greatest amount of time underwater), with an overall significance of negligible.

7.2.4 Underwater Noise

7.2.4.1 This pressure relates to the potential for diving seabirds to be directly or indirectly affected by underwater noise as a consequence of the Salamander Project. The pressure is screened in for seabirds for the Offshore Array Area and Offshore ECC during the Construction and Decommissioning phases only. The highest emissions of underwater noise in terms of the range of effect will occur during construction, which could include piling, UXO detonations and other sources such as cable laying. Further detail on underwater noise during construction is provided within the Underwater Noise Assessment Report (**Volume ER.A.4, Appendix 4.1 Underwater Noise Modelling Report**), specifically in relation to piling, UXO clearance, vessel transit, seabed dredging and trenching, rock placement, and suction pile anchor installation.

7.2.4.2 Whilst UXO detonation / clearance represents the worst-case Sound Pressure Level $(SPL)_{PEAK}$, impact piling and other sources of noise (e.g. vessels and installation of foundations without impact piling) are expected to constitute the background Sound Exposure Level $(SEL)_{CUM}$ associated with the Construction phase of the Salamander Project.

7.2.4.3 There is limited evidence about the extent to which seabirds would be disturbed by underwater noise, but it is expected that it could affect those species that dive for prey. Underwater noise could in turn disturb and displace those prey species on which diving birds forage. An important seabird prey species, sand eel, have no swim bladder and are classed in the least sensitive category in guidelines by Popper *et al*. (2014) on the sensitivity of fish to underwater noise. Other important prey fish species sensitive to underwater noise, such as herring, are expected to temporarily flee the construction area. Considering the large spatial scales that seabirds forage over, any escape movement of prey fish is not expected to significantly reduce prey availability. In addition, the timescale of any noise generated will be limited and unlikely to affect a large area or significant numbers of birds.

7.2.4.4 The significance of underwater noise for seabirds varies between species, with minimal significance for species that do not dive (e.g. gulls, skuas and tubenoses) or dive for a short duration (e.g. common and Arctic tern). Diving seabirds with moderate or high abundance are more likely to be exposed to underwater noise effects. Auks were some of the most commonly observed species at the Salamander Project, and therefore, are more likely to be exposed to the effects of underwater noise than birds with lower presence. Auks spend up to a quarter of the time underwater during foraging (Thaxter *et al*., 2010; Spencer, 2012), meaning exposure to underwater noise is likely to occur. However, underwater noise impacts are generally expected to cover a relatively small spatial extent, and will only occur where operational vessels are present. These species are sensitive to visual disturbance, reducing the likelihood that auks will be foraging underwater in the vicinity of operational vessels (i.e. sources of underwater noise).

7.2.4.5 Underwater noise for seabirds was scoped out of the EIAR at scoping, with no consultee comments received on this point.

7.2.5 Above Water Noise

7.2.5.1 This pressure relates to the potential for birds to be directly or indirectly affected by above water noise as a consequence of the Salamander Project. The pressure is screened in for birds for the Offshore Array Area and Offshore ECC during the Construction and Decommissioning phases only, and relates to the noise generated by construction and decommissioning activities or movement of vessels.

7.2.5.2 There is limited evidence about the extent to which birds would be disturbed by above water noise in the marine environment, but it is expected that it could affect those species that forage in the vicinity of the vessel activities.

7.2.5.3 The pressure is indirectly considered assessed in the EIAR through the assessment of vessel related disturbance. The assessment varies between species, with the magnitude being low, the sensitivity low to high (except for intertidal birds where a high is noted, with no intertidal birds screened in for the HRA) and a significance of negligible to minor.

7.2.6 Toxic Contamination

7.2.6.1 This pressure relates to the potential for a reduction in water quality resulting from sources such as spillages or leaks. The pressure is screened in for seabirds for the Offshore Array Area and Offshore ECC during the Construction, Operation & Maintenance and Decommissioning phases. There is a risk of pollution being accidentally released from vessels, machinery and offshore fuel storage tanks during all phases of the

Salamander Project as well as from the turbines themselves in operation & maintenance. The release of such contaminants may lead to impacts on birds.

7.2.6.2 There is potential for pollution interaction with all bird species. However, mitigation (as listed in **Table 3-1**) includes a Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan (OEMP), including a Marine Pollution Contingency Plan (MPCP), which will be developed. As such, risks of accidental spills of hazardous material are extremely unlikely to occur. The plan also contains measures to prevent spills, as well as remedial actions and response measures in the rare event a spillage occurs.

7.2.6.3 Toxic contamination was scoped out of the EIAR on the basis of the embedded mitigation, specifically the Marine Pollution Contingency Plan (MPCP) which will be adopted to ensure the potential for accidental release of pollutants is limited, which reduces the likelihood of spillages to negligible.

7.2.7 Light

7.2.7.1 This pressure relates to the potential for light pollution to affect the behaviour of birds. The pressure is screened in for birds for the Offshore Array Area during the Construction, Operation & Maintenance and Decommissioning phases. Lighting will be used on Salamander Project infrastructure and on vessels throughout all phases of the Salamander Project. Several types of lighting may be used, including navigational lights, safety lighting, and for illumination if works are conducted between dusk and dawn.

7.2.7.2 The response of birds to nocturnal lighting is complex and the disturbance effects of lighting may derive from changes in orientation, disorientation and attraction or repulsion from the altered light environment, which in turn may affect foraging, migration and communication (Longcore and Rich, 2004). Birds may collide with each other or a structure, or become exhausted as a result. Conversely, for unlit structures at night or during foggy conditions, it is possible that the risk of collision may be greater because moving rotors may not be detectable (Trapp, 1998). Migrating birds are likely to be particularly susceptible to any adverse effects of lighting. Around two thirds of all bird species migrate during darkness, when collision risk is expected to be higher than during daylight (Hüppop *et al*., 2006). The evidence for this impact is, however, mixed. ICES (2011) state that birds are somewhat less inclined to avoid turbines at night, but in contrast extended periods of infra-red monitoring at night using a Thermal Animal Detection System (TADS) at Nysted provided unexpected evidence that no movements of birds were detected below 120 m during the hours of darkness, even during periods of heavy seabird migration (Desholm, 2005). Welcker *et al*. (2017) found nocturnal migrants do not have a higher risk of collision with wind energy facilities than do diurnally active species, but rather appear to circumvent collision more effectively.

7.2.7.3 A Lighting and Marking plan (LMP) is proposed, to ensure that all lighting used on structures will comply with the specific requirements as set out in Civil Aviation Publication (CAP) 764, CAA Policy and Guidelines on Wind Turbines (Version 6, February 2016).

7.2.7.4 Light was scoped out of the EIAR on the basis that the species sensitive to artificial light emissions (which includes petrels and shearwater) were recorded in very low abundance in the Site Specific Study Area. Review of modelled density data, such as those provided by Kober *et al.* (2010), Waggitt *et al.* (2019) and NatureScot (2022), support the conclusion that the Offshore Development Area supports low densities. Therefore, artificial light impacts are scoped out of assessment due to lack of impact pathway.

7.2.8 Collision

7.2.8.1 This pressure relates to the potential for mortality arising from birds colliding with turbine structures, which will only occur within the Offshore Array Area once operational.

7.2.8.2 Operational WTGs and associated infrastructure present a collision risk for seabirds flying in the Offshore Array Area. This includes birds commuting between breeding and foraging sites, migrating birds, and those foraging for food within the Offshore Array Area. Direct collision with infrastructure may result in injury or death, however, it is assumed that all collisions with operational WTGs result in mortality.

7.2.8.3 Collision Risk Modelling (CRM) was undertaken to produce mathematical based quantitative estimates of the number of collisions per species per season for each year of operation (**Volume ER.A.4, Annex 12.3: Collision Risk Modelling Report**). The input parameters are presented in full within **Volume ER.A.4, Annex 12.3: Collision Risk Modelling Report**, with the analysis performed using the StochLab R package produced by Caneco *et al*. (2022), with stochastic and deterministic results presented, as per NatureScot advice on the Scoping Report and requested by MD-LOT in the Scoping Opinion (with that consultation referenced in **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**).

7.2.8.4 Collision estimates are based on seabird flight heights, with generic Flight Height Distribution (FHD) data (Johnston *et al*., 2014) used to determine the proportion of flights at Collision Risk Height (CRH) per species. Density estimates are also incorporated into the model, used to determine flux, or the rate at which each species is likely to fly through the wind farm.

7.2.8.5 Flight height and density information, along with the turbine specifications, number of turbines, and other seabird parameters (e.g. size, flight type, and nocturnal activity), are used to estimate the number of collisions. Initially, it is assumed that birds within the wind farm do not avoid individual turbines, swept areas, or blades. Avoidance rates are used to adjust collision estimates; it is noted that advice in the Scoping response[18] (referenced in **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**) referred to the SNCB (2014) rates (as provided in JNCC *et al*., 2014). Revised avoidance rates are now available (Ozsanlav-Harris *et al*. (2023)). It is understood that NatureScot are currently reviewing their advice on avoidance rates in light of the updated information and 'while we do not anticipate any significant changes, an updated version of our guidance note should be available online shortly' (as referenced in the Morven Scoping Response[16]). The SNCB (2014) rates (JNCC *et al*., 2014) are applied on a without prejudice basis in the SNCB approach conclusions. Whereas, the overall assessment conclusions draw on the updated Ozsanlav-Harris *et al*. (2023) rates as applied in the Applicant's approach. The specific values applied under both approaches are presented in **Volume ER.A.4, Annex 12.3: Collision Risk Modelling Report**; noting that this has applied the 'grouped' avoidance rates (e.g. large gull) and not species specific (which is understood to be the SNCB preferred approach when applying avoidance rates). SNCB rates and the Applicant's approach rates are shown in **Table 7-4**. If species specific avoidance rates (avoidance rate of 0.995) were applied for herring gull (where sufficient data is available) the collision risk would fall for that species compared to the grouped avoidance rates**.**

[16] https://marine.gov.scot/sites/default/files/morven_-_scop-0028_-_appendix_i_-_consultation_responses_and_advice_-_november_2023.pdf

Table 7-4 Collision avoidance rates included for consideration in assessment

Species	SNCB Approach (as per NatureScot (2023h))	The Applicant's Approach
	Avoidance rate (SNCB, 2014)	Avoidance rate (Ozslanlav-Harris *et al.* 2023) (grouped avoidance rate)
Kittiwake	0.989	0.993
Gannet	0.989	0.993
Herring gull	0.995	0.994

7.2.8.6 In the EIAR, collision estimates, or predicted mortalities due to collision, are put into context of species specific breeding seasons and non-breeding seasons, and assessed against regional population estimates. NatureScot (2020) information on seasonality in the Scottish marine environment was used to determine seasonality for each species considered. Regional populations were estimated using species foraging ranges and SMP data. The methodology is detailed in the Regional Populations Note, appended to **Volume ER.A.4, Annex 12.8: Offshore Ornithology Regional Populations Report**.

7.2.8.7 For HRA purposes, as for the distributional responses assessment (Section 7.2.2), it is then necessary to 'apportion' the impact to multiple SPAs with these identified through Screening (SBES, 2023a) and confirmed here in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. For the Salamander Project, the values applied in the apportioning are presented in **Volume RP.A.2, Annex 1: Apportioning Report**. During the breeding season, a theoretical approach (developed by NatureScot (NatureScot, 2018)) has been applied to determine the proportion of birds from SPA sites which use proposed development areas in the breeding season. In the non-breeding period, the standard approach to apportioning that utilises the information presented in Furness (2015), is adopted. It is noted (as referenced in **Table 1-2**) that in the breeding season an alternative apportioning tool can be applied for kittiwake, guillemot, razorbill and shag, referred to as the Butler Tool (Butler *et al*. 2020). However, the Butler tool requires an update (which is understood to be pending) before it can be applied with the updated colony count data which itself is an update on the Seabird 2000 data. The apportioning undertaken here therefore applies the theoretical approach excluding the Butler Tool but inclusive of the updated colony count data from the Fourth Breeding Seabird Census[17] and therefore provides the most up to date apportioning results for the Salamander Project.

7.2.8.8 Following apportioning, there is the potential requirement to undertake Population Viability Analysis (PVA). This requirement follows where the potential for impact could exceed 0.02 percentage point increase in mortality (following NatureScot advice, as provided in their Scoping response[18] and referenced in **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). That advice was that the use of the Natural England PVA tool (Searle *et al*., 2019) is supported, with reference to the NatureScot Guidance Note 11 where modelling is required over three time periods (25 years, 35 years (the lease period) and 50 years)

[17] https://jncc.gov.uk/our-work/seabirds-count/
[18] https://marine.gov.scot/node/24085

(NatureScot, 2023k). When a PVA has been carried out, the assessment is presented as a narrative informed by the PVA outputs (which are presented in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**).

7.2.8.9 The potential for impact made here then differs from the EIAR, for which the impact is determined at population level. At population level, the significance of impact resulting from collision risk was determined to be no impact to negligible for all species.

7.2.9 Indirect Physical Impact (to habitat)

7.2.9.1 This pressure 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 from temporary seabed preparation works, that could result in an indirect impact to bird habitat. The pressure is screened in for the Offshore ECC only during the Construction, Operation & Maintenance and Decommissioning phases.

7.2.9.2 Indirect physical damage to habitats can result from deposition of suspended sediments following activities such as seabed preparation or cable burial, or scour around physical structures including mooring and cable protection. Such indirect effects will be localised (within the 15 km range applied at Screening (SBES, 2023a)) (Waggit *et al*., 2019, Wade *et al.* (2016) and Bradbury (2014)).

7.2.9.3 The EIAR considers physical habitat in terms of long-term loss or alteration of supporting habitat. The magnitude applied in the EIAR to overall habitat loss is no change to low, with a negligible sensitivity for all species and a significance of no impact to negligible.

7.2.10 Suspended Sediment

7.2.10.1 This pressure relates to an increase in turbidity arising from disturbance of seabed sediments that could result from seabed works or following erosion around structures. The pressure is screened in for the Offshore ECC only during the Construction, Operation & Maintenance and Decommissioning phases.

7.2.10.2 Interaction with seabed habitats during the Construction phase of the Salamander Project, such as infrastructure installation, is likely to result in suspension of seabed sediments into the water column. The most significant activities in terms of the potential for suspension of seabed substrates includes the installation and burial of cables, and the installation of anchors / mooring points.

7.2.10.3 Sediments within the Offshore Array Area mainly consist of sand and variable proportions of gravel and mud. Sediments along the Offshore ECC transition from sand and muddy sand near the Offshore Array Area to mostly gravelly sand towards the coast, with patches of sand where current speeds are highest (refer to **Volume ER.A.3, Chapter 9: Benthic and Intertidal Ecology**). Therefore, the resulting suspended sediment concentrations are expected to be short-term and localised, particularly within the Offshore ECC, where sediment composition shifts from sand-dominated to gravel-dominated. Coarser sediments such as gravels are expected to settle closer to the point of disturbance than finer sediments.

7.2.10.4 The magnitude of change as regards suspended sediment applied in the EIAR is low. The sensitivity of seabirds to the change was linked to diving behaviour, being low for most species but medium for auks. The significance of the impact was concluded to be negligible to minor.

7.3 Assessment for Ornithology and Distributional Response (visual disturbance/ displacement and barrier effects)

7.3.1 Assessment Summary

7.3.1.1 The assessment for ornithology and physical presence is presented below in **Table 7-5** to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. Where additional information is required to support the assessment and conclusions presented here, that is referenced where relevant within the table and provided below. The pressure considered here is screened in for all project phases.

Table 7-5 Consideration of the potential for an adverse effect alone for ornithology with respect to distributional response (visual disturbance/ displacement and barrier effects)

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km	A Vessel Management Plan will be developed and include details of: - vessel routing to and from construction sites and ports, - vessel notifications including Notice to Mariners and Kingfisher Bulletin; and	No AEOI as detailed in the Supporting Information section (see below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.8**.
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (see below). Assessment for the OAA presented in **Section 7.3.7**
		Shag (Offshore ECC)	Yes: Foraging range of 23.7 km		No AEOI as detailed in the Supporting Information section (see below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5**.
Calf of Eday SPA					
No	OAA: 195 km Offshore ECC: 193 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (see below). Assessment for the OAA presented in **Section 7.3.7.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
Cape Wrath SPA				- code of conduct for vessel operators including for the purpose of reducing disturbance and collision with marine fauna.	
No	OAA: 233 km Offshore ECC: 211 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7**
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.8.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Coquet Island SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
No	OAA: 250 km Offshore ECC: 244 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Section 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km identified as being within the foraging range plus 15 km buffer		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.9.**
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Gannet (OAA)	Yes: Foraging range of 590 km (species and site specific range for Forth Islands SPA)		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Foula SPA					
No	OAA: 276 km Offshore ECC: 277 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km (identified as being within the foraging range plus 15 km buffer)		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
					Assessment for the OAA presented in **Section 7.3.8**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.9.**
Handa SPA					
No	OAA: 243 km Offshore ECC: 218 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Hermaness, Saxa Vord and Valla Field SPA					
No	OAA: 343 km Offshore ECC: 344 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**
Hoy SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
No	OAA: 171 km Offshore ECC: 160 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**
		Guillemot (Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.8**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Marwick Head SPA					
No	OAA: 203 km Offshore ECC: 195 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
					Assessment for the OAA presented in **Section 7.3.10.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
		Razorbill (Offshore ECC)	Yes: Foraging range of 122.2 km (identified as being within the foraging range plus 15 km buffer)		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.**
North Rona and Sula Sgeir SPA					
No	OAA: 310 km Offshore ECC: 290 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km plus 15 km spatial extent of pressure.		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km Offshore ECC: 199 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		Assessment for the OAA presented in **Section 7.3.7.** Assessment for the foraging SPA presented in **Section 7.3.12.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
					There is no AEOI to the kittiwake feature of any breeding SPA and no significant effect on kittiwake at population level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the kittiwake feature of this site.
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.** There is no AEOI to the puffin feature of any breeding SPA and no significant effect on puffin at population level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the puffin feature of this site.
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
		Puffin (Offshore ECC)	Yes: Foraging range of 265.4 km (identified as being within		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
			the foraging range plus 15 km buffer)		Assessment for the OAA presented in **Section 7.3.10.**
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		Assessment for the OAA presented in **Section 7.3.11.** Assessment for the foraging SPA presented in **Section 7.3.12.** There is no AEOI to the gannet feature of any breeding SPA and no significant effect on gannet at population level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the gannet feature of this site.
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		Assessment for the OAA presented in **Section 7.3.7.** There is no AEOI to the kittiwake feature of any breeding SPA and no significant effect on kittiwake at population level (**Volume ER.A.3, Chapter 12 Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the kittiwake feature of this site.
		Puffin (Offshore ECC)	Yes: Foraging range of 265.4 km		Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.** There is no AEOI to the puffin feature of any breeding SPA and no significant effect on puffin at population level (**Volume ER.A.3, Chapter**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
					12: Offshore and Intertidal Ornithology). Therefore, there is no AEOI of the puffin feature of this site.
Rousay SPA					
No	OAA: 197 km Offshore ECC: 192 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
St Abbs Head to Fast Castle SPA					
No	OAA: 192 km Offshore ECC: 177 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.11.**
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.10.**

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
Sumburgh Head SPA					
No	OAA: 244 km Offshore ECC: 245 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km Offshore ECC: 26 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.8.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the Offshore ECC presented in **Sections 7.3.3 and 7.3.5.** Assessment for the OAA presented in **Section 7.3.9.**
West Westray SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives
No	OAA: 207 km Offshore ECC: 203 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.3.7.**

7.3.2 Supporting Information for Ornithology Distributional Response (visual disturbance/ displacement and barrier effects)

7.3.2.1 The following sections present the information for the Salamander Project in stages. The Construction and Decommissioning phase first, followed by the Offshore ECC in the operational phase and finally the Offshore Array Area for the operational phase. As described in the Project Design Envelope Parameters (**Volume ER.A.2, Chapter 4: Project Description**), the worst-case scenario envelope during decommissioning is considered equal to the worst-case during construction. Therefore, these phases are treated together.

7.3.3 Distributional Response for the Offshore Export Cable Corridor (Construction and Decommissioning Phase)

7.3.3.1 Distributional responses in relation to construction/decommissioning activities within the Offshore ECC are expected to be spatially and temporally limited to the vicinity of the cable laying vessel and associated support vessels. Any distributional responses will therefore be localised and temporary. Therefore, it is deemed that the magnitude of any impact would be negligible, and could not contribute to an AEOI for any feature of any SPA or Ramsar.

7.3.4 Distributional Response for the Offshore Array Area (Construction and Decommissioning Phase)

7.3.4.1 During the Construction and Decommissioning phase, the presence of physical infrastructure such as WTGs will range from none to equal to the full operational Project, as described in the Project Design Envelope Parameters (**Volume ER.A.2, Chapter 4: Project Description**). Therefore, the magnitude of distributional responses is assumed to be less than or equal to the magnitude of distributional responses predicted for the Operational phase. As no AEOI is expected during the Operational phase for any feature (**Table 7-5**), it can be concluded that no AEOI would occur during the Construction phase.

7.3.5 Distributional Response for the Offshore Export Cable Corridor (Operational Phase)

7.3.5.1 Disturbance or displacement in the operational phase in the Offshore ECC could occur as a result of vessel movements related to inspections and/or repairs to the export cable. Any such vessel activity would be occasional and transient, and any distributional response would be spatially limited to the vicinity of the vessel(s). As such, the magnitude of any distributional response in the Offshore ECC in the operational phase is considered to be negligible and could not contribute to an AEOI for any feature of any SPA or Ramsar.

7.3.6 Distributional Response for the Offshore Array Area (Operational Phase)

7.3.6.1 During the operational phase, seabirds may be impacted by distributional response resulting from the Offshore Array Area due to the physical presence of WTGs, vessel traffic and helicopter activity. The magnitude of this impact has been quantified using the Matrix Approach, as advised by SNCBs (2017) and further detailed in **Volume ER.A.4, Annex 12.5: Displacement Assessment** and **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**. The Matrix Approach calculates mortality by assuming a certain proportion of birds present in or near a development are displaced (the displacement rate) and, of those, a certain proportion go on to suffer mortality as a consequence (the mortality rate). For all species considered, the number of birds considered is the estimated seasonal mean peak of the total abundance of birds within the Offshore Array Area plus a 2k m buffer, as further detailed in **Volume ER.A.4, Annex 12.5: Displacement Assessment**. The mean peak abundances are summarised in **Table 7-6**.

Table 7-6 Summary of seasonal mean peak abundance in Offshore Array Area plus 2 km buffer. All behaviours are included

Species	Season	
	Breeding	Non-breeding
Kittiwake	3,718	220
Guillemot	3,616	11,779
Razorbill	334	484
Puffin	357	N/A
Gannet	442	369

7.3.6.2 Distributional response and mortality rates have been presented following NatureScot's Guidance Note 8 (NatureScot, 2023h). However, there is evidence to suggest that the distributional response and mortality rates recommended in NatureScot (2023h) are overly precautionary, as detailed in **Section 7.2.2**. In particular, the APEM (2022) review and the empirical evidence published in Macarthur Green (2023) both indicate that the SNCB distributional response rates are in excess of observed rates for similar geographic areas and bird densities, with modelled data from Searle *et al*. (2018) and van Kooten *et al*. (2019) indicating a mortality rate of 1% at most. In those cases, an alternative approach has been presented using the Applicant's preferred, evidence-led distributional response and mortality rates, presented alongside SNCB parameters. The rates presented are summarised in **Table 7-3**. Seasonal definitions are presented in **Volume ER.A.4, Annex 12.5 Displacement Assessment**.

7.3.6.3 The quantification of distributional response -induced mortality provides an estimate of the total number of birds subject to mortality. For the purposes of this RIAA, it is necessary to estimate which of those birds may be associated with specific SPAs or Ramsar sites, in order to calculate the impact on the population for which each site is designated. This is done through the process of apportionment. Full details of the apportionment process and the resulting proportion of birds associated with each SPA or Ramsar are given in **Volume RP.A.2, Annex 1: Apportioning Report**.

7.3.6.4 Where the apportioned impact is estimated to increase baseline mortality to the population of a SPA or Ramsar by greater than 0.02 percentage points (using either the Applicant's or NatureScot's distributional response and mortality rates), PVA is subsequently carried out to further investigate the potential effect on the population. Baseline mortality rates used are summarised in **Table 7-7** (Horswill and Robinson, 2015).

Table 7-7 Summary of baseline mortality rates used

Species	Baseline mortality rate (adult)
Kittiwake	14.60%
Guillemot	6.10%
Razorbill	10.50%
Puffin	9.40%
Gannet	8.10%

7.3.6.5 For greater clarity, distributional response results (and PVAs, where relevant) are presented by species, rather than by SPA/Ramsar. The conclusions for each SPA/Ramsar are summarised in **Table 7-5**, based on the results for each feature being assessed.

7.3.7 Distributional Response for Kittiwake

7.3.7.1 The impact of distributional response on kittiwake is summarised in **Table 7-8** to **Table 7-12**.

Table 7-8 Kittiwake distributional response mortality calculations (total)

Approach	Breeding Season			Non-breeding season		
	Abundance	Distributional Response/Mortality Rate	Seasonal Mortality	Abundance	Distributional Response/Mortality Rate	Seasonal Mortality
SNCB	3,718	30% / 1% to 3%	11.15 to 33.46	220	30% / 1% to 3%	0.66 to 1.98
Applicant	3,718	30% / 1%	11.15	220	30% / 1%	0.66

Table 7-9 Kittiwake distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.501	0.6923	3.867 to 11.602	0.024	0.6923	0.016 to 0.047	3.883 to 11.650
Calf of Eday SPA	0.000	0.6923	0.004 to 0.011	0.001	0.6923	0.001 to 0.003	0.005 to 0.014
Cape Wrath SPA	0.004	0.6923	0.028 to 0.085	0.000	0.6923	0.000 to 0.001	0.029 to 0.086
Copinsay SPA	0.002	0.6923	0.015to 0.046	0.001	0.6923	0.001 to 0.003	0.016 to 0.049
Coquet Island SPA	0.001	0.6923	0.005 to 0.014	0.000	0.6923	0.000 to 0.000	0.005 to 0.014
East Caithness Cliffs SPA	0.071	0.6923	0.552 to 1.655	0.077	0.6923	0.051 to 0.153	0.603 to 1.808

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Fair Isle SPA	0.001	0.6923	0.004 to 0.012	0.001	0.6923	0.001 to 0.003	0.005 to 0.015
Farne Islands SPA	0.007	0.6923	0.054 to 0.163	0.007	0.6923	0.004 to 0.013	0.059 to 0.176
Forth Islands SPA	0.011	0.6923	0.081 to 0.244	0.006	0.6923	0.004 to 0.012	0.085 to 0.255
Foula SPA	0.000	0.6923	0.002 to 0.006	0.001	0.6923	0.000 to 0.001	0.002 to 0.007
Fowlsheugh SPA	0.103	0.6923	0.794 to 2.382	0.018	0.6923	0.012 to 0.035	0.806 to 2.418
Handa SPA	0.004	0.6923	0.028 to 0.085	0.000	0.6923	0.000 to 0.000	0.028 to 0.085
Hoy SPA	0.000	0.6923	0.003 to 0.010	0.001	0.6923	0.001 to 0.002	0.004 to 0.011
Marwick Head SPA	0.001	0.6923	0.009 to 0.028	0.001	0.6923	0.001 to 0.002	0.010 to 0.030
North Caithness Cliffs SPA	0.011	0.6923	0.083 to 0.249	0.019	0.6923	0.013 to 0.038	0.096 to 0.287
North Rona and Sula Sgeir SPA	0.000	0.6923	0.000 to 0.000	0.000	0.6923	0.000 to 0.000	0.000 to 0.000
Noss SPA	0.000	0.6923	0.001 to 0.003	0.001	0.6923	0.001 to 0.002	0.002 to 0.005
Rousay SPA	0.001	0.6923	0.001 to 0.003	0.003	0.6923	0.002 to 0.007	0.003 to 0.009
St. Abb's Head to Fast Castle SPA	0.010	0.6923	0.080 to 0.241	0.007	0.6923	0.004 to 0.013	0.085 to 0.254

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Sumburgh Head SPA	0.001	0.6923	0.006 to 0.018	0.000	0.6923	0.000 to 0.001	0.006 to 0.019
Troup, Pennan and Lion's Head SPA	0.164	0.6923	1.264 to 3.791	0.028	0.6923	0.019 to 0.056	1.282 to 3.847
West Westray SPA	0.003	0.6923	0.025 to 0.076	0.023	0.6923	0.015 to 0.046	0.040 to 0.121

Table 7-10 Kittiwake distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.501	0.6923	3.867	0.024	0.6923	0.016	3.883
Calf of Eday SPA	0.000	0.6923	0.004	0.001	0.6923	0.001	0.005
Cape Wrath SPA	0.004	0.6923	0.028	0.000	0.6923	0.000	0.029
Copinsay SPA	0.002	0.6923	0.015	0.001	0.6923	0.001	0.016
Coquet Island SPA	0.001	0.6923	0.005	0.000	0.6923	0.000	0.005
East Caithness Cliffs SPA	0.071	0.6923	0.552	0.077	0.6923	0.051	0.603

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Fair Isle SPA	0.001	0.6923	0.004	0.001	0.6923	0.001	0.005
Farne Islands SPA	0.007	0.6923	0.054	0.007	0.6923	0.004	0.059
Forth Islands SPA	0.011	0.6923	0.081	0.006	0.6923	0.004	0.085
Foula SPA	0.000	0.6923	0.002	0.001	0.6923	0.000	0.002
Fowlsheugh SPA	0.103	0.6923	0.794	0.018	0.6923	0.012	0.806
Handa SPA	0.004	0.6923	0.028	0.000	0.6923	0.000	0.028
Hoy SPA	0.000	0.6923	0.003	0.001	0.6923	0.001	0.004
Marwick Head SPA	0.001	0.6923	0.009	0.001	0.6923	0.001	0.010
North Caithness Cliffs SPA	0.011	0.6923	0.083	0.019	0.6923	0.013	0.096
North Rona and Sula Sgeir SPA	0.000	0.6923	0.000	0.000	0.6923	0.000	0.000
Noss SPA	0.000	0.6923	0.001	0.001	0.6923	0.001	0.002
Rousay SPA	0.001	0.6923	0.001	0.003	0.6923	0.002	0.003
St. Abb's Head to Fast Castle SPA	0.010	0.6923	0.080	0.007	0.6923	0.004	0.085

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Sumburgh Head SPA	0.001	0.6923	0.006	0.000	0.6923	0.000	0.006
Troup, Pennan and Lion's Head SPA	0.164	0.6923	1.264	0.028	0.6923	0.019	1.282
West Westray SPA	0.003	0.6923	0.025	0.023	0.6923	0.015	0.040

Table 7-11 Kittiwake increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	3.883 to 11.650	60,904	8,892	0.01 to 0.02	Requires PVA
Calf of Eday SPA	0.005 to 0.014	3,434	501	0.00 to 0.00	No AEOI
Cape Wrath SPA	0.029 to 0.086	19,400	2,832	0.00 to 0.00	No AEOI
Copinsay SPA	0.016 to 0.049	19,100	2,789	0.00 to 0.00	No AEOI
Coquet Island SPA	0.005 to 0.014	932	136	0.00 to 0.00	No AEOI
East Caithness Cliffs SPA	0.603 to 1.808	65,000	9,490	0.00 to 0.00	No AEOI
Fair Isle SPA	0.005 to 0.015	36,320	5,303	0.00 to 0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Farne Islands SPA	0.059 to 0.176	8,241	1,203	0.00 to 0.00	No AEOI
Forth Islands SPA	0.085 to 0.255	16,800	2,453	0.00 to 0.00	No AEOI
Foula SPA	0.002 to 0.007	7,680	1,121	0.00 to 0.00	No AEOI
Fowlsheugh SPA	0.806 to 2.418	73,300	10,702	0.00 to 0.00	No AEOI
Handa SPA	0.028 to 0.085	21,464	3,134	0.00 to 0.00	No AEOI
Hoy SPA	0.004 to 0.011	6,000	876	0.00 to 0.00	No AEOI
Marwick Head SPA	0.010 to 0.030	15,400	2,248	0.00 to 0.00	No AEOI
North Caithness Cliffs SPA	0.096 to 0.287	26,200	3,825	0.00 to 0.00	No AEOI
North Rona and Sula Sgeir SPA	0.000 to 0.000	10,000	1,460	0.00 to 0.00	No AEOI
Noss SPA	0.002 to 0.005	14,040	2,050	0.00 to 0.00	No AEOI
Rousay SPA	0.003 to 0.009	9,800	1,431	0.00 to 0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.085 to 0.254	42,340	6,182	0.00 to 0.00	No AEOI
Sumburgh Head SPA	0.006 to 0.019	2,732	399	0.00 to 0.00	No AEOI
Troup, Pennan and Lion's Head SPA	1.282 to 3.847	63,200	9,227	0.00 to 0.01	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
West Westray SPA	0.040 to 0.121	47,800	6,979	0.00 to 0.00	No AEOI

Table 7-12 Kittiwake increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	3.883	60,904	8,892	0.01	No AEOI
Calf of Eday SPA	0.005	3,434	501	0.00	No AEOI
Cape Wrath SPA	0.029	19,400	2,832	0.00	No AEOI
Copinsay SPA	0.016	19,100	2,789	0.00	No AEOI
Coquet Island SPA	0.005	932	136	0.00	No AEOI
East Caithness Cliffs SPA	0.603	65,000	9,490	0.00	No AEOI
Fair Isle SPA	0.005	36,320	5,303	0.00	No AEOI
Farne Islands SPA	0.059	8,241	1,203	0.00	No AEOI
Forth Islands SPA	0.085	16,800	2,453	0.00	No AEOI
Foula SPA	0.002	7,680	1,121	0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fowlsheugh SPA	0.806	73,300	10,702	0.00	No AEOI
Handa SPA	0.028	21,464	3,134	0.00	No AEOI
Hoy SPA	0.004	6,000	876	0.00	No AEOI
Marwick Head SPA	0.010	15,400	2,248	0.00	No AEOI
North Caithness Cliffs SPA	0.096	26,200	3,825	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.000	10,000	1,460	0.00	No AEOI
Noss SPA	0.002	14,040	2,050	0.00	No AEOI
Rousay SPA	0.003	9,800	1,431	0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.085	42,340	6,182	0.00	No AEOI
Sumburgh Head SPA	0.006	2,732	399	0.00	No AEOI
Troup, Pennan and Lion's Head SPA	1.282	63,200	9,227	0.00	No AEOI
West Westray SPA	0.040	47,800	6,979	0.00	No AEOI

Kittiwake Population Viability Analysis

7.3.7.2 Based on the results presented in **Table 7-11**, the upper end of the SNCB approach for distributional response mortality is predicted to lead to an increase in mortality rate of 0.02 percentage points to the population at Buchan Ness to Collieston Coast SPA. The full details of the PVA is set out in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

7.3.7.3 The site level PVA modelling concluded that using the upper end of distributional response mortality based on the SNCB approach (i.e. 11.65 additional adult mortalities apportioned to Buchan Ness to Collieston Coast SPA), the median reduction in growth rate of the impacted scenario would be 0.1% whilst after the lifespan of the Salamander Project (assumed to be 35 years; see **Section 1.11**), the total population size would be 2.1% smaller than the counterfactual population. Note that under both impacted and unimpacted (counterfactual) scenarios, the median population is predicted to grow slightly over the lifespan of the Salamander Project.

7.3.7.4 This level of impact is considered to be negligible and does not represent an impact that could be said to adversely affect the likelihood of the SPA achieving its conservation objectives.

7.3.8 Distributional Response for Guillemot

7.3.8.1 The impact of distributional response on guillemot is summarised in **Table 7-13** to **Table 7-17**. Of note is Fowlsheugh SPA. The site specific foraging range for guillemot from the SPA is 95.2 km (as highlighted in the scoping responses received, see **Table 1-2**), with the Offshore Array Area being some 91 km from the SPA boundary. During apportioning (**Volume RP.A.2, Annex 1: Apportioning Report)** it became clear that although Screening (SBES, 2023a) identified potential connectivity based on the relevant foraging range and the location of the Offshore Array Area boundary, in apportioning when the foraging range is applied to the location of colonies within the Fowlsheugh SPA these were all beyond that foraging range and therefore resulted in zero birds being apportioned to that SPA.

Table 7-13 Guillemot distributional response mortality calculations (total)

Approach	Breeding Season			Non-breeding season		
	Abundance	Distributional response /Mortality Rate	Seasonal Mortality	Abundance	Distributional response /Mortality Rate	Seasonal Mortality
SNCB	3,616	60% / 3% to 5%	65.09 to 108.48	11,779	60% / 1% to 3%	70.67 to 212.02
Applicant	3,616	50% / 1%	18.08	11,779	50% / 1%	58.90

Table 7-14 Guillemot distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.757	N/A	49.25 to 82.09	0.220	N/A	15.52 to 46.56	64.77 to 128.65
Copinsay SPA	0.000	N/A	0.00 to 0.00	0.000	N/A	0.00 to 0.00	0.00 to 0.00
Fowlsheugh SPA	0.000	N/A	0.00 to 0.00	0.000	N/A	0.00 to 0.00	0.00 to 0.00
Troup, Pennan and Lion's Head SPA	0.228	N/A	14.82 to 24.70	0.178	N/A	12.55 to 37.65	27.37 to 62.35

Table 7-15 Guillemot distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.757	N/A	13.68	0.220	N/A	12.93	26.61
Copinsay SPA	0.000	N/A	0.00	0.000	N/A	0.00	0.00
Fowlsheugh SPA	0.000	N/A	0.00	0.000	N/A	0.00	0.00
Troup, Pennan and Lion's Head SPA	0.228	N/A	4.12	0.178	N/A	10.46	14.58

Table 7-16 Guillemot increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	64.77 to 128.65	17,280	1,054	0.37 to 0.74	Requires PVA
Copinsay SPA	0.00 to 0.00	29,450	1,796	0.00 to 0.00	No AEOI
Fowlsheugh SPA	0.00 to 0.00	56,450	3,443	0.00 to 0.00	No AEOI
Troup, Pennan and Lion's Head SPA	27.37 to 62.35	44,600	2,721	0.06 to 0.14	Requires PVA

Table 7-17 Guillemot increase in annual mortality (individuals) at each Special Protection Area (Applicant's approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	26.61	17,280	1,054	0.15	Requires PVA
Copinsay SPA	0.00	29,450	1,796	0.00	No AEOI
Fowlsheugh SPA	0.00	56,450	3,443	0.00	No AEOI
Troup, Pennan and Lion's Head SPA	14.58	44,600	2,721	0.03	Requires PVA

Guillemot Population Viability Analysis

7.3.8.2 Based on the results presented in **Table 7-16** and **Table 7-17**, PVA is required to further assess the impact on the guillemot population at two SPAs for which it is a designated feature: Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Head SPA. The full details of the PVA is set out in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

7.3.8.3 The PVA results are summarised in **Table 7-18**.

Table 7-18 Guillemot population viability analysis results (individuals)

SPA / Ramsar name	Approach	Additional Annual mortality	Median Counterfactual of Growth Rate	Median Counterfactual of Population Size (after 35 years)
Buchan Ness to Collieston Coast SPA	SNCB (lower)	64.77	0.998	0.936
	SNCB (Upper)	128.65	0.996	0.877
	Applicant	26.61	0.999	0.973
Troup, Pennan and Lion's Head SPA	SNCB (lower)	27.37	0.999	0.966
	SNCB (Upper)	62.35	0.998	0.924
	Applicant	14.58	0.999	0.982

7.3.8.4 For Buchan Ness to Collieston Coast SPA, the guillemot feature is currently classed as being in "Favourable Maintained" condition (**Appendix B: 'Information on the Designated Sites Screened in'**). The guillemot population at the Buchan Ness to Collieston Coast SPA has grown from its citation level of 17,280 to 39,440 based on recent count data (Burnell et al., 2023). The PVA results show that the guillemot population is expected to continue growing reaching a median population size of 85,603 to 94,975 breeding adults after 35 years. The annual growth rate is expected to be 0.2 – 0.4% lower under the impacted scenarios than under the unimpacted scenario. In the context of substantial growth between the SPA citation population and recent counts (Burnell et al., 2023), and with the population expected to continue to grow, it is therefore evident that even under the upper range of impacts modelled, there is no risk of the Salamander Project having an adverse impact on the integrity of the guillemot feature of Buchan Ness to Collieston Coast SPA.

7.3.8.5 For Troup, Pennan and Lion's Head SPA, the guillemot feature is currently classed as being in "Unfavourable Declining" condition. The population has declined from the citation population of 44,600 breeding adults in 1995 to 31,893 breeding adults based on recent count data (Burnell *et al.*, 2023). The PVA modelling indicates that the population will grow from its current level under all scenarios, rising from the current population size of 31,893 breeding adults to a median estimate of 78,905 breeding adults under no impact, or 72,866 to 76,262 breeding adults under the range of distributional response mortalities following SNCB recommended rates. The annual growth rate is expected to be 0.1 – 0.2% lower under the impacted scenarios than under the unimpacted scenario. Overall, therefore, it would appear that the impact of the

Project is minimal and would not lead to an adverse effect on the status of the guillemot feature of the site, and therefore would not lead to an adverse effect on the integrity of Troup, Pennan and Lion's Head SPA.

7.3.9 Distributional Response for Razorbill

7.3.9.1 The impact of distributional response on Razorbill is summarised in **Table 7-19** to **Table 7-23**.

Table 7-19 Razorbill distributional response mortality calculations (total)

Approach	Breeding Season			Non-breeding season		
	Abundance	Distributional response /Mortality Rate	Seasonal Mortality	Abundance	Distributional response /Mortality Rate	Seasonal Mortality
SNCB	334	60% / 3% to 5%	6.01 to 10.02	484	60% / 1% to 3%	2.90 to 8.71
Applicant	334	50% / 1%	1.67	484	50% / 1%	2.42

Table 7-20 Razorbill distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	
East Caithness Cliffs SPA	0.000	N/A	0.000 to 0.000	0.034	N/A	0.100 to 0.299	0.100 to 0.299
Fowlsheugh SPA	0.239	N/A	1.437 to 2.395	0.010	N/A	0.028 to 0.084	1.465 to 2.479
Troup, Pennan and Lion's Heads SPA	0.155	N/A	0.934 to 1.557	0.005	N/A	0.014 to 0.042	0.948 to 1.598

Table 7-21 Razorbill distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	Apportioning value	Adult/ Immature ratio	Apportioned adult mortality	
East Caithness Cliffs SPA	0.000	N/A	0.000	0.034	N/A	0.083	0.083
Fowlsheugh SPA	0.239	N/A	0.399	0.010	N/A	0.023	0.423
Troup, Pennan and Lion's Heads SPA	0.155	N/A	0.259	0.005	N/A	0.012	0.271

Table 7-22 Razorbill increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
East Caithness Cliffs SPA	0.100 to 0.299	15,800	1,659	0.00 to 0.00	No AEOI
Fowlsheugh SPA	1.465 to 2.479	5,800	609	0.03 to 0.04	Requires PVA
Troup, Pennan and Lion's Heads SPA	0.948 to 1.598	4,800	504	0.02 to 0.03	Requires PVA

Table 7-23 Razorbill increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
East Caithness Cliffs SPA	0.083	15,800	1,659	0.00	No AEOI
Fowlsheugh SPA	0.423	5,800	609	0.01	No AEOI
Troup, Pennan and Lion's Heads SPA	0.271	4,800	504	0.01	No AEOI

Razorbill Population Viability Analysis

7.3.9.2 Based on the results presented in **Table 7-22** and **Table 7-23**, when using the SNCB approach, PVA is required to further assess the impact on the razorbill population at two SPAs for which it is a designated feature: Troup, Pennan and Lion's Head SPA, and Fowlsheugh SPA. The full details of the PVA is set out in **Volume ER.A.4, Annex 12.4 Population Viability Annex, ER.A.4, Annex 12.9 Cumulative Assessment Population Viability Analysis (PVA)** and **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

7.3.9.3 The PVA results are summarised in **Table 7-24**.

Table 7-24 Razorbill Population Viability Analysis Results (individuals)

SPA / Ramsar name	Approach	Additional Annual mortality	Median Counterfactual of Growth Rate	Median Counterfactual of Population Size (after 35 years)
Fowlsheugh SPA	SNCB (lower)	1.465	1.000	0.997
	SNCB (Upper)	2.479	1.000	0.994
Troup, Pennan and Lion's Head SPA	SNCB (lower)	0.948	1.000	0.995
	SNCB (Upper)	1.598	1.000	0.990

7.3.9.4 For Fowlsheugh SPA, the razorbill feature is currently classed as being in "Favourable Maintained" condition. The razorbill population has grown from the citation population of 5,800 breeding adults to 18,844breeding adults based on recent count data (Burnell et al., 2023). The annual growth rate is expected to be less than 0.0% lower under all impact scenarios compared to the counterfactual, whilst the population size after 35 years is expected to be 0.5% to 1% lower than the counterfactual population size. This level of impact is considered to be negligible and does not represent an impact that could be said to adversely affect the likelihood of the SPA achieving its conservation objectives.

7.3.9.5 For Troup, Pennan and Lion's Head SPA, the razorbill feature is currently classed as being in "Unfavourable Declining" condition. However, the population has increased from the citation population of 4,800 breeding adults in 1995 to 6,054 breeding adults based on recent count data (Burnell et al., 2023). The PVA modelling indicates that the population will decline from its current level under all scenarios, dropping from a current population size of 6,054 breeding adults to a median estimate of 2,329 breeding adults under no impact, or 2,304 to 2,313 breeding adults under the range of distributional response mortalities following SNCB recommended rates. The annual growth rate is expected to be at most 0.02% lower under the SNCB high impacted scenarios than under the unimpacted scenario. The median counterfactual population size is reduced by 0.6% to 1.1% after 35 years. Overall, therefore, it would appear that the impact of the Project is minimal and would not lead to an adverse effect on the status of the razorbill feature of the site, and therefore would not lead to an adverse effect on the integrity of Troup, Pennan and Lion's Head SPA.

7.3.10 Distributional Response for Puffin

7.3.10.1 The impact of distributional response on puffin is summarised in **Table 7-25** to **Table 7-29**. Note that puffin are assumed to disperse rapidly and widely post-breeding and are therefore only considered in the breeding season (as agreed with NatureScot in **Table 1-2)**.

Table 7-25 Puffin distributional response mortality calculations (total)

Approach	Breeding Season		
	Abundance	Distributional response /Mortality Rate	Seasonal Mortality
SNCB	357	60% / 3% to 5%	6.43 to 10.71
Applicant	357	50% / 1%	1.79

Table 7-26 Puffin distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (SNCB approach)

SPA / Ramsar name	Breeding Season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Cape Wrath SPA	0.007	N/A	0.048 to 0.080	0.048 to 0.080
Coquet Island SPA	0.102	N/A	0.658 to 1.096	0.658 to 1.096
Fair Isle SPA	0.024	N/A	0.154 to 0.257	0.154 to 0.257
Farne Islands SPA	0.231	N/A	1.483 to 2.472	1.483 to 2.472
Forth Islands SPA	0.356	N/A	2.285 to 3.809	2.285 to 3.809
Foula SPA	0.000	N/A	0.000 to 0.000	0.000 to 0.000
Hoy SPA	0.002	N/A	0.015 to 0.025	0.015 to 0.025
North Caithness Cliffs SPA	0.019	N/A	0.120 to 0.200	0.120 to 0.200
Sule Skerry and Sule Stack SPA	0.145	N/A	0.934 to 1.557	0.934 to 1.557

Table 7-27 Puffin distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Breeding Season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Cape Wrath SPA	0.007	N/A	0.013	0.013
Coquet Island SPA	0.102	N/A	0.183	0.183
Fair Isle SPA	0.024	N/A	0.043	0.043
Farne Islands SPA	0.231	N/A	0.412	0.412
Forth Islands SPA	0.356	N/A	0.635	0.635
Foula SPA	0.000	N/A	0.000	0.000
Hoy SPA	0.002	N/A	0.004	0.004
North Caithness Cliffs SPA	0.019	N/A	0.033	0.033
Sule Skerry and Sule Stack SPA	0.145	N/A	0.259	0.259

Table 7-28 Puffin increase in mortality (individuals) at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Cape Wrath SPA	0.048 to 0.080	11,800	1,109	0.00 to 0.00	No AEOI
Coquet Island SPA	0.658 to 1.096	31,686	2,978	0.00 to 0.00	No AEOI
Fair Isle SPA	0.154 to 0.257	23,000	2,162	0.00 to 0.00	No AEOI
Farne Islands SPA	1.483 to 2.472	76,798	7,219	0.00 to 0.00	No AEOI
Forth Islands SPA	2.285 to 3.809	28,000	2,632	0.01 to 0.01	No AEOI
Foula SPA	0.000 to 0.000	96,000	9,024	0.00 to 0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Hoy SPA	0.015 to 0.025	7,000	658	0.00 to 0.00	No AEOI
North Caithness Cliffs SPA	0.120 to 0.200	4,160	391	0.00 to 0.01	No AEOI
Sule Skerry and Sule Stack SPA	0.934 to 1.557	93,800	8,817	0.00 to 0.00	No AEOI

Table 7-29 Puffin increase in mortality (individuals) at each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Cape Wrath SPA	0.013	11,800	1,109	0.00	No AEOI
Coquet Island SPA	0.183	31,686	2,978	0.00	No AEOI
Fair Isle SPA	0.043	23,000	2,162	0.00	No AEOI
Farne Islands SPA	0.412	76,798	7,219	0.00	No AEOI
Forth Islands SPA	0.635	28,000	2,632	0.00	No AEOI
Foula SPA	0.000	96,000	9,024	0.00	No AEOI
Hoy SPA	0.004	7,000	658	0.00	No AEOI
North Caithness Cliffs SPA	0.033	4,160	391	0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.259	93,800	8,817	0.00	No AEOI

7.3.11 Distributional Response for Gannet

7.3.11.1 The impact of distributional response on gannet is summarised in **Table 7-30** to **Table 7-34**.

Table 7-30 Gannet distributional response mortality calculations (total)

Approach	Breeding Season			Non-breeding season		
	Abundance	Distributional response/Mortality Rate	Seasonal Mortality	Abundance	Distributional response/Mortality Rate	Seasonal Mortality
SNCB	442	70% / 1% to 3%	3.09 to 9.28	369	70% / 1% to 3%	2.58 to 7.75
Applicant	442	70% / 1%	3.09	369	70% / 1%	2.58

Table 7-31 Gannet distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Fair Isle SPA	0.021	0.0607	0.004 to 0.012	0.022	0.0607	0.057 to 0.171	0.061 to 0.183
Forth Islands SPA	0.459	0.0607	0.086 to 0.258	0.313	0.0607	0.808 to 2.423	0.894 to 2.682
Hermaness, Saxa Vord and Valla Field SPA	0.044	0.0607	0.008 to 0.025	0.137	0.0607	0.355 to 1.064	0.363 to 1.089
North Rona and Sula Sgeir SPA	0.021	0.0607	0.004 to 0.012	0.000	0.0607	0.000 to 0.000	0.004 to 0.012
Noss SPA	0.034	0.0607	0.006 to 0.019	0.055	0.0607	0.142 to 0.427	0.149 to 0.446
Sule Skerry and Sule Stack SPA	0.028	0.0607	0.005 to 0.016	0.000	0.0607	0.000 to 0.000	0.005 to 0.016

Table 7-32 Gannet distributional response mortality (individuals) apportioned to each Special Protection Area or Ramsar (Applicant's approach)

SPA/ Ramsar name	Breeding Season			Non-breeding season			Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	
Fair Isle SPA	0.021	0.0607	0.004	0.022	0.0607	0.057	0.061
Forth Islands SPA	0.459	0.0607	0.086	0.313	0.0607	0.808	0.894
Hermaness, Saxa Vord and Valla Field SPA	0.044	0.0607	0.008	0.137	0.0607	0.355	0.363
North Rona and Sula Sgeir SPA	0.021	0.0607	0.004	0.000	0.0607	0.000	0.004
Noss SPA	0.034	0.0607	0.006	0.055	0.0607	0.142	0.149
Sule Skerry and Sule Stack SPA	0.028	0.0607	0.005	0.000	0.0607	0.000	0.005

Table 7-33 Gannet increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult distributional response mortality	Site Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.061 to 0.183	2,332	189	0.00 to 0.01	No AEOI
Forth Islands SPA	0.894 to 2.682	43,200	3,499	0.00 to 0.01	No AEOI
Hermaness, Saxa Vord and Valla Field SPA	0.363 to 1.089	32,800	2,657	0.00 to 0.00	No AEOI
North Rona and Sula Sgeir SPA	0.004 to 0.012	20,800	1,685	0.00 to 0.00	No AEOI
Noss SPA	0.149 to 0.446	13,720	1,111	0.00 to 0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.005 to 0.016	11,800	956	0.00 to 0.00	No AEOI

Table 7-34 Gannet increase in annual mortality (individuals) at each Special Protection Area or Ramsar (Applicant's approach)

SPA / Ramsar name	Annual adult distributional response mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.061	2,332	189	0.00	No AEOI
Forth Islands SPA	0.894	43,200	3,499	0.00	No AEOI
Hermaness, Saxa Vord and Valla Field SPA	0.363	32,800	2,657	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.004	20,800	1,685	0.00	No AEOI
Noss SPA	0.149	13,720	1,111	0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.005	11,800	956	0.00	No AEOI

7.3.12 Distributional Response for Foraging Special Protection Areas

7.3.12.1 Certain SPAs are designated for their importance as foraging grounds to seabirds, but do not themselves contain breeding seabird colonies. The SPAs and features that fall into this category that have been screened in for distributional response impacts are:

- Northumberland Marine SPA:
  - Kittiwake; and
  - Puffin.
- Outer Firth of Forth & St Andrew's Bay Complex SPA:
  - Kittiwake;
  - Puffin; and
  - Gannet.

7.3.12.2 As these sites do not contain distinct breeding colonies, impacts cannot be apportioned to them in the same way as for SPAs designated due to breeding populations.

7.3.12.3 However, if breeding populations of relevant (at both SPA colonies and non-SPA colonies) are maintained, then it would be expected that so too would the population of seabirds using the foraging SPAs be maintained.

7.3.12.4 In addition, where there is no physical overlap between the Offshore Array Area and the SPA, there is no pathway for the Salamander Project to adversely affect the suitability of the SPA as foraging habitat.

7.3.12.5 No AEOI is expected for any feature of any breeding SPAs. No Significant Effect was found to the wider kittiwake, puffin or gannet populations at population level (**Volume ER.A.3, Chapter 12 Offshore and Intertidal Ornithology**). The Offshore Array Area and Offshore ECC do not physically overlap either SPA. Therefore, it can be concluded that kittiwake and puffin will be maintained as features of the Northumberland Marine SPA, and kittiwake, puffin and gannet will be maintained as features of the Outer Firth of Forth & St Andrew's Bay Complex SPA.

7.3.13 Conclusion for Ornithology Distributional Response (visual disturbance/ displacement and barrier effects)

7.3.13.1 In reference to **Table 7-5** it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA or Ramsar in relation to distributional response alone and therefore, subject to natural change, the qualifying features of the SPAs and Ramsars (where these overlap with a SAC or SPA) will be maintained in the long term.

7.4 Assessment for Ornithology and Entanglement

7.4.1 Assessment Summary

7.4.1.1 The HRA Screening identified 16 SPAs and a total of three qualifying features across these SPAs with potential for LSE from entanglement.

7.4.1.2 The assessment for ornithology and entanglement is presented below in **Table 7-35**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for the operation and maintenance phase only.

Table 7-35 Consideration of the Potential for an Adverse Effect Alone for Ornithology with respect to Entanglement

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		**Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?**		**Relevant Mitigation?**	**Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)**
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km	Mooring lines and dynamic floating inter-array cables will be inspected according to the maintenance plan to confirm the structural integrity of the cable systems using a risk-based adaptive management approach. During these inspections, the presence of discarded fishing gear will be evaluated for entanglement risk and appropriate actions taken to remove if deemed necessary.	**To avoid deterioration of the habitats of the qualifying species** The potential to affect the conservation objective in terms of the habitat is not relevant for entanglement (which will not affect the physical habitat of birds). No further information required to demonstrate that the conservation objective will be maintained or support the conclusion of no AEOI. **To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained** The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. No further information required to demonstrate that the conservation objective will be maintained. There is a potential risk that diving seabirds could become entangled in mooring lines associated with turbine infrastructure (primary
Cape Wrath SPA					
No	OAA: 233 km Offshore ECC: 211 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Guillemot (OAA)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
Coquet Island SPA					
No	OAA: 250 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
	Offshore ECC: 244 km				entanglement) or in marine debris that itself becomes entangled in mooring lines (secondary entanglement). Primary entanglement is considered extremely unlikely due to the physical characteristics of cables and mooring lines (Benjamins *et al.*, 2014) and therefore will not affect the population of any of the bird species screened in. Natural Resources Wales have also previously stated that interactions between seabirds and the cables and mooring lines associated with floating offshore wind farms are of negligible importance (Aquaterra and MarineSpace, 2022). There is a greater risk of secondary entanglement with ghost fishing gear. However, the mitigation measures in place will reduce the potential likelihood of any entanglement, making it of negligible consequence and insufficient to result in significant disturbance or a population level effect. No further information required to demonstrate that the conservation objective will be maintained. Therefore, it is concluded that there is no potential for an AEOI with respect to entanglement in mooring lines for any of the European sites and/or their qualifying
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Razorbill (OAA)	Yes: Foraging range of 122.2 km (identified as being within the foraging range plus 15 km buffer)		
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Forth Islands SPA					
No	OAA: 172 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
	Offshore ECC: 153 km				ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.
Foula SPA					
No	OAA: 276 km Offshore ECC: 277 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km		
		Razorbill (OAA)	Yes: Foraging range of 122.2 km		
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
North Caithness Cliffs SPA					
No	OAA: 147 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		**Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?**		**Relevant Mitigation?**	**Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)**
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
	Offshore ECC: 135 km				
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km Offshore ECC: 199 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Outer Firth of Forth and St Andrews Bay Complex SPA (note -this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Puffin (OAA)	Yes: Foraging range of 265.4 km		
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km		

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
	Offshore ECC: 26 km	Razorbill (OAA)	Yes: Foraging range of 122.2 km		

7.4.2 Conclusion for Ornithology and Entanglement

7.4.2.1 In reference to **Table 7-35**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA in relation to entanglement alone and therefore, subject to natural change, the qualifying features of the SPAs will be maintained in the long term.

7.5 Assessment for Ornithology and Underwater Noise

7.5.1 Assessment Summary

7.5.1.1 The HRA Screening identified 17 SPAs and a total of four qualifying features across these SPAs with potential for LSE from underwater noise.

7.5.1.2 The assessment for ornithology and underwater noise is presented below in **Table 7-36**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

7.5.1.3 The potential impacts of the clearance of UXOs are discussed within for completeness. However, as it is not possible at this time to precisely define the number of UXO which may require detonation, a separate Marine Licence application and EPS Licence application (with associated environmental assessments) will be submitted for the detonation of any UXO which may be identified as requiring clearance in pre-construction surveys.

Table 7-36 Consideration of the Potential for an Adverse Effect Alone for Ornithology with respect to Underwater Noise

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km	None specific for ornithology.	**To avoid deterioration of the habitats of the qualifying species** The potential to affect the conservation objective in terms of the habitat is not relevant for underwater noise (which will not affect the physical habitat of birds). No further information required to demonstrate that the conservation objective will be maintained or support the conclusion of no AEOI. **To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained** Key sources of underwater noise will be within the OAA (notably associated with piling and UXO clearance), with potential for underwater noise to arise in the Offshore ECC should UXO clearance be required. There is potential risk of disturbance. In terms of the potential to affect viability, that relates to activities with the potential to kill, injure or significantly disturb species. The significance of impact on key ornithological prey species presented in the EIAR (see
		Shag (Offshore ECC)	Yes: Foraging range of 23.7 km		
Cape Wrath SPA					
No	OAA: 233 km Offshore ECC: 211 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
Coquet Island SPA					
No	OAA: 250 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 244 km				**Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology, Section 4.11**), combined with the understanding of bird sensitivity to underwater noise highlighted in Section 7.2.4, mean that the potential to affect viability is limited to disturbance only. The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. The assessment here is therefore related to the potential for disturbance of birds only. Birds screened in may forage within areas subject to the underwater noise ZoI. However, with respect to the key sources of underwater noise (piling, UXO clearance and marine survey) these will be temporary and localised, representing a very small proportion of the large area over which birds will forage. Such occurrences of underwater noise will coincide with physical presence of vessels, reducing the potential for individual birds to encounter levels of noise sufficient to result in disturbance. Underwater sound as a result of operation of the wind turbines is extremely unlikely to result in sound levels that would harm birds (and in any case would apply to the auk species screened in only, as shag is screened in for the Offshore ECC only). In the unlikely event that such low levels of sound emission result in displacement of birds away from wind turbines, this impact would already be accounted for by the above-water operational displacement assessment. No further information required to demonstrate that the conservation objective will be maintained. Therefore, it is concluded
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km (identified as being within the foraging range plus 15 km buffer		
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Foula SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 276 km Offshore ECC: 277 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		that there is no potential for an AEOI with respect to underwater noise for any of the European sites and/or their qualifying ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
		Guillemot (Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
		Razorbill (Offshore ECC)	Yes: Foraging range of 122.2 km		
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 199 km				
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Puffin (Offshore ECC)	Yes: Foraging range of 265.4 km		
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km Offshore ECC: 26 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		

7.5.2 Conclusion for Ornithology and Underwater Noise

7.5.2.1 In reference to **Table 7-36**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA in relation to underwater noise alone and therefore, subject to natural change, the qualifying features of these SPAs will be maintained in the long term.

7.6 Assessment for Ornithology and Above Water Noise

7.6.1 Assessment Summary

7.6.1.1 The HRA Screening identified 17 SPAs and a total of four qualifying features across these SPAs with potential for LSE from above water noise.

7.6.1.2 The assessment for ornithology and above water noise is presented below in **Table 7-37**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

Table 7-37 Consideration of the Potential for an Adverse Effect Alone for Ornithology with respect to Above Water Noise

<table>
<tr><th colspan="2">Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)</th><th colspan="2">Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?</th><th>Relevant Mitigation?</th><th>Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)</th></tr>
<tr><td colspan="6">Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.</td></tr>
<tr><td colspan="6">Buchan Ness to Collieston Coast SPA</td></tr>
<tr><td rowspan="2">No</td><td rowspan="2">OAA: 33 km
Offshore ECC: 5 km</td><td>Guillemot (OAA and Offshore ECC)</td><td>Yes: Foraging range of 95.2 km</td><td rowspan="8">A Vessel Management Plan will be developed and include details of:

- vessel routing to and from construction sites and ports,

- vessel notifications including Notice to Mariners and Kingfisher Bulletin; and

- code of conduct for vessel operators including for the purpose of reducing disturbance and collision with marine fauna.</td><td rowspan="8">To avoid deterioration of the habitats of the qualifying species

The potential to affect the conservation objective in terms of the habitat is not relevant for above water noise (which will not affect the physical habitat of birds). No further information required to demonstrate that the conservation objective will be maintained or support the conclusion of no AEOI.

To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained

Key sources of above water noise relate to Construction and Decommissioning activities including the associated movement of vessels. As for underwater noise, such activities could occur within the OAA and the Offshore</td></tr>
<tr><td>Shag (Offshore ECC)</td><td>Yes: Foraging range of 23.7 km</td></tr>
<tr><td colspan="4">Cape Wrath SPA</td></tr>
<tr><td>No</td><td>OAA: 233 km
Offshore ECC: 211 km</td><td>Puffin (OAA and Offshore ECC)</td><td>Yes: Foraging range of 265.4 km</td></tr>
<tr><td colspan="4">Copinsay SPA</td></tr>
<tr><td>No</td><td>OAA: 160 km
Offshore ECC: 156 km</td><td>Guillemot (OAA and Offshore ECC)</td><td>Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)</td></tr>
<tr><td colspan="4">Coquet Island SPA</td></tr>
<tr><td>No</td><td>OAA: 250 km</td><td>Puffin (OAA and Offshore ECC)</td><td>Yes: Foraging range of 265.4 km</td></tr>
</table>

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 244 km				ECC. but is potentially relevant should a significant disturbance to species result. In terms of the potential to affect viability, that relates to activities with the potential to kill, injure or significantly disturb species. The nature of the works is such that above water noise will not be sufficient to result in injury or mortality, mean that the potential to affect viability is limited to disturbance only. The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. The assessment here is therefore related to the potential for disturbance of birds only. Birds screened in may forage within areas subject to the above water noise ZoI. However, the activities generating the above water noise will be temporary and localised, representing a very small proportion of the large area over which birds will forage. Such occurrences of above water noise will coincide with physical presence of vessels, reducing the potential for individual birds to encounter levels of noise sufficient to result in disturbance. No further information required to demonstrate that the conservation objective will be maintained. Therefore, it is concluded that there is no potential for an AEOI with respect to above water noise for any of the European sites and/or their qualifying ornithology features screened in
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km (identified as being within the foraging range plus 15 km buffer		
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Foula SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 276 km Offshore ECC: 277 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		for assessment and no measurable impact to carry forward for in-combination assessment.
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
		Guillemot (Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
		Razorbill (Offshore ECC)	Yes: Foraging range of 122.2 km		
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 199 km				
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Puffin (Offshore ECC)	Yes: Foraging range of 265.4 km		
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km Offshore ECC: 26 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		

7.6.2 Conclusion for Ornithology and Above Water Noise

7.6.2.1 In reference to **Table 7-37**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA in relation to above water noise alone and therefore, subject to natural change, the qualifying features of these SPAs will be maintained in the long term.

7.7 Assessment for Ornithology and Toxic Contamination

7.7.1 Assessment Summary

7.7.1.1 The HRA Screening identified 36 SPAs and Ramsars and a total of twelve qualifying features across these SPAs and Ramsars with potential for LSE from toxic contamination.

7.7.1.2 The assessment for ornithology and toxic contamination is presented below in **Table 7-38**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

Table 7-38 Consideration of the potential for an adverse effect alone for ornithology with respect to Toxic Contamination

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km	A Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan (OEMP), including a Marine Pollution Contingency Plan (MPCP) will be developed.	**To avoid deterioration of the habitats of the qualifying species** Toxic contamination could arise during any project phase or within any project aspect. The potential for toxic contamination to affect the conservation objective in terms of the habitat relates to a potential indirect effect on birds (for example if prey species were affected). The mitigation measures that form part of the application mean that any such spills or leaks, should they occur, will be managed by the implementation of measures set out the post consent plans committed to in the Mitigations Register (**Volume ER.A.4, Annex 6.1: Commitments and Mitigations Register**). Therefore the risk of such an event occurring is minimal, with measures in place to deal with any suck spills or leaks should they occur. Therefore, it is concluded that there is no potential for an AEOI with respect to toxic contamination for any of the European sites and/or their qualifying ornithology features screened in for
		Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Herring gull (OAA and Offshore ECC)	Yes: Foraging range of 85.6 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Shag (Offshore ECC)	Yes: Foraging range of 23.7 km.		
Calf of Eday SPA					
No	OAA: 195 km Offshore ECC: 193 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Cape Wrath SPA					
No	OAA: 233 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 211 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		assessment and no measurable impact to carry forward for in-combination assessment. **To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained** Toxic contamination in relation to offshore wind farms is not considered to result in disturbance of birds (and therefore no potential for significant disturbance would result). No further information required to demonstrate that the conservation objective will be maintained. In terms of the potential for toxic contamination to affect viability, that relates to activities with the potential to kill, injure or significantly disturb species. Toxic contamination has the potential to result in injury or mortality of birds, depending on what the contamination consists of, how much is spilt and where. The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. The assessment here is therefore related to the potential for direct injury or mortality of birds.
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
		Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Coquet Island SPA					
No	OAA: 250 km Offshore ECC: 244 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
East Caithness Cliffs SPA					
No	OAA: 134 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		**Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?**		**Relevant Mitigation?**	**Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)**
	Offshore ECC: 117 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		The mitigation measures that form part of the application mean that any such spills or leaks, should they occur, will be managed by the implementation of measures set out the post consent plans committed to in the Mitigations Register (**Volume ER.A.4, Annex 6.1: Commitments and Mitigations Register**). Therefore the risk of such an event occurring is minimal, with measures in place to deal with any such spills or leaks should they occur. Therefore, it is concluded that there is no potential for an adverse effect on integrity with respect to toxic contamination for any of the European sites and/or their qualifying ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km (identified as being within the foraging range plus 15 km buffer		
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Fetlar SPA					
No	OAA: 323 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 325 km				
Flannan Isles SPA					
No	OAA: 377 km Offshore ECC: 348 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Gannet (OAA and Offshore ECC)	Yes: Foraging range of 590 km (species and site specific range for Forth Islands SPA)		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Foula SPA					
No	OAA: 276 km Offshore ECC: 277 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Fowlsheugh SPA					
No	OAA: 91 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
	Offshore ECC: 69 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Herring gull (OAA and Offshore ECC)	Yes: Foraging range of 85.6 km identified as being within the foraging range plus 15 km buffer		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		
Handa SPA					
No	OAA: 243 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
	Offshore ECC: 218 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Hermaness, Saxa Vord and Valla Field SPA					
No	OAA: 343 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
	Offshore ECC: 344 km	Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Guillemot (Offshore ECC)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
		Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Loch of Strathbeg SPA and Ramsar					
No	OAA: 35 km Offshore ECC: 8 km	Sandwich tern (OAA and Offshore ECC)	Yes: Foraging range of 57.5 km		
Marwick Head SPA					
No	OAA: 203 km Offshore ECC: 195 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Mingulay and Berneray SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 391 km Offshore ECC: 357 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
		Razorbill (Offshore ECC)	Yes: Foraging range of 122.2 km		
North Rona and Sula Sgeir SPA					
No	OAA: 310 km Offshore ECC: 290 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km plus 15 km spatial extent of pressure.		
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 199 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km.		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Puffin (Offshore ECC)	Yes: Foraging range of 265.4 km		
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA and Offshore ECC	Yes: Foraging range of 300.6 km		
		Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Rathlin Island SPA					
No	OAA: 395 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 364 km				
Ronas Hill – North Roe and Tingon Ramsar					
No	OAA: 319 km Offshore ECC: 321 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
Rousay SPA					
No	OAA: 197 km Offshore ECC: 192 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
St Abbs Head to Fast Castle SPA					
No	OAA: 192 km Offshore ECC: 177 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
St Kilda SPA					
No	OAA: 427 km Offshore ECC: 396 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km	Gannet (OAA and Offshore ECC)	Yes: Foraging range of 509.4 km		
	Offshore ECC: 226 km	Puffin (OAA and Offshore ECC)	Yes: Foraging range of 265.4 km		
Sumburgh Head SPA					
No	OAA: 244 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
	Offshore ECC: 245 km	Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
The Shiant Isles SPA					
No	OAA: 300 km Offshore ECC: 270 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km	Guillemot (OAA and Offshore ECC)	Yes: Foraging range of 95.2 km		
	Offshore ECC: 26 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Herring gull (OAA and Offshore ECC)	Yes: Foraging range of 85.6 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
		Razorbill (OAA and Offshore ECC)	Yes: Foraging range of 122.2 km		
West Westray SPA					
No	OAA: 207 km Offshore ECC: 203 km	Fulmar (OAA and Offshore ECC)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA and Offshore ECC)	Yes: Foraging range of 300.6 km		
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar					
No	OAA: 41 km Offshore ECC: 13 km	Common tern (Offshore ECC)	Yes: Foraging range of 26.9 km		
		Eider (Offshore ECC)	Yes: Foraging range of 21.5 km		
		Little tern (Offshore ECC)	Yes: Foraging range of 5 km		
		Sandwich tern (Offshore ECC)	Yes: Foraging range of 57.5 km		

7.7.2 Conclusion for Ornithology and Toxic Contamination

7.7.2.1 In reference to **Table 7-38**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA or Ramsar in relation to toxic contamination alone and therefore, subject to natural change, the qualifying features of the SPA or Ramsars will be maintained in the long term.

7.8 Assessment for Ornithology and Light

7.8.1 Assessment Summary

7.8.1.1 The HRA Screening identified 35 SPAs and Ramsars and a total of eight qualifying features across these SPAs and Ramsars with potential for LSE from light.

7.8.1.2 The assessment for ornithology and light is presented below in **Table 7-39**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

Table 7-39 Consideration of the Potential for an Adverse Effect Alone for Ornithology with respect to Light

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km	Approval and implementation of a Lighting and Marking Plan (LMP) in agreement with the Civil Aviation Authority (CAA), which will set out specific requirements in terms of aviation lighting to be installed on the wind turbines, as required under Civil Aviation Publication (CAP) 764, CAA Policy and Guidelines on Wind Turbines (Version 6, February 2016) and will include details of:	**To avoid deterioration of the habitats of the qualifying species** The potential to affect the conservation objective in terms of the habitat is not relevant for light (which will not affect the physical habitat of birds). No further information required to demonstrate that the conservation objective will be maintained or support the conclusion of no AEOI. **To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained** Key sources of light on the OAA relate to lighting used on Salamander Project infrastructure during the O&M phase together with lighting used on vessels during all project phases. There is potential for disturbance to result. In terms of the potential to affect viability, that relates to activities with the potential to kill, injure or significantly disturb species. The nature of the works is
		Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Herring gull (OAA)	Yes: Foraging range of 85.6 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Calf of Eday SPA					
No	OAA: 195 km Offshore ECC: 193 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Cape Wrath SPA					
No	OAA: 233 km Offshore ECC: 211 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
		Puffin (OAA)	Yes: Foraging range of 265.4 km	- Lights and their shape, colour and character; and - Notifications and Inspections.	such that light will not be sufficient to result in injury or mortality, meaning that the potential to affect viability is limited to disturbance only. The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. The assessment here is therefore related to the potential for disturbance of birds only. Birds screened in may forage within areas subject to the light ZoI in the vicinity of the OAA. The mitigation applied with respect to lighting means that the Salamander Project is in keeping with the minimum legal requirements for lighting (in relation to aviation and navigation), which will minimise the risks of birds becoming attracted to, or disorientated by turbines at night or in poor weather. Meeting these requirements would mean the Salamander Project would therefore be consistent with legal requirements, with the design aiming to minimise the emission of light whilst still complying with safety protocols and regulations in relation to aviation and shipping navigation. In addition, for the species screened in for light, the EIAR identified fulmar as having a low sensitivity to light with all other species a negligible sensitivity. Therefore, it is concluded that there is no potential for an AEOI with respect to light for any of the European sites and/or their qualifying ornithology features screened in for assessment and no
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Guillemot (OAA)	Yes: Foraging range of 153.7 km (identified as being within the foraging range plus 15 km buffer)		
		Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Coquet Island SPA					
No	OAA: 250 km Offshore ECC: 244 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
		Razorbill (OAA)	Yes: Foraging range of 122.2 km identified as being within the foraging range plus 15 km buffer		measurable impact to carry forward for in-combination assessment.
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Fetlar SPA					
No	OAA: 323 km Offshore ECC: 325 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Flannan Isles SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 377 km Offshore ECC: 348 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Gannet (OAA)	Yes: Foraging range of 590 km (species and site specific range for Forth Islands SPA)		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Foula SPA					
No	OAA: 276 km Offshore ECC: 277 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km		
		Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
		Herring gull (OAA)	Yes: Foraging range of 85.6 km plus 15 km spatial extent of pressure.		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Razorbill (OAA)	Yes: Foraging range of 122.2 km		
Handa SPA					
No	OAA: 243 km Offshore ECC: 218 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Hermaness, Saxa Vord and Valla Field SPA					
No	OAA: 343 km Offshore ECC: 344 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA)	Yes: Foraging range of 509.4 km		
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Loch of Strathbeg SPA and Ramsar					
No	OAA: 35 km Offshore ECC: 8 km	Sandwich tern (OAA)	Yes: Foraging range of 57.5 km		
Marwick Head SPA					
No	OAA: 203 km Offshore ECC: 195 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Mingulay and Berneray SPA					
No	OAA: 391 km Offshore ECC: 357 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
North Rona and Sula Sgeir SPA					

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 310 km Offshore ECC: 290 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km plus 15 km spatial extent of pressure.		
Northumberland Marine SPA (note -this is a foraging SPA and not a breeding site)					
No	OAA: 209 km Offshore ECC: 199 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Gannet (OAA)	Yes: Foraging range of 509.4 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
	Offshore ECC: 116 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Rathlin Island SPA					
No	OAA: 395 km Offshore ECC: 364 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Ronas Hill – North Roe and Tingon Ramsar					
No	OAA: 319 km Offshore ECC: 321 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Rousay SPA					
No	OAA: 197 km Offshore ECC: 192 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
St Abbs Head to Fast Castle SPA					
No	OAA: 192 km Offshore ECC: 177 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
St Kilda SPA					
No	OAA: 427 km Offshore ECC: 396 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		
		Puffin (OAA)	Yes: Foraging range of 265.4 km		
Sumburgh Head SPA					
No	OAA: 244 km Offshore ECC: 245 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
The Shiant Isles SPA					
No	OAA: 300 km Offshore ECC: 270 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km	Guillemot (OAA)	Yes: Foraging range of 95.2 km		

Is there Direct Overlap between the Salamander Project and the SPA? (distances are to the SPA)		**Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?**		**Relevant Mitigation?**	**Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)**
	Offshore ECC: 26 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Herring gull (OAA)	Yes: Foraging range of 85.6 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		
		Razorbill (OAA)	Yes: Foraging range of 122.2 km		
West Westray SPA					
No	OAA: 207 km Offshore ECC: 203 km	Fulmar (OAA)	Yes: Foraging range of 1,200.2 km		
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		

7.8.2 Conclusion for Ornithology and Light

7.8.2.1 In reference to **Table 7-39**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA or Ramsar in relation to lighting alone and therefore, subject to natural change, the qualifying features of the SPAs and Ramsars will be maintained in the long term.

7.9 Assessment for Ornithology and Collision

7.9.1 Assessment Summary

7.9.1.1 The assessment for ornithology and collision is presented below in **Table 7-40**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. Where additional information is required to support the assessment and conclusions presented here, that is referenced where relevant within the table and provided below. The pressure considered here is screened in for the operation and maintenance phase only.

Table 7-40 Consideration of the potential for an adverse effect alone for ornithology with respect to collision

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Buchan Ness to Collieston Coast SPA					
No	OAA: 33 km Offshore ECC: 5 km	Herring gull (OAA)	Yes: Foraging range of 85.6 km	N/A.	No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.4.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Calf of Eday SPA					
No	OAA: 195 km Offshore ECC: 193 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Cape Wrath SPA					
No	OAA: 233 km Offshore ECC: 211 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Copinsay SPA					
No	OAA: 160 km Offshore ECC: 156 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Coquet Island SPA					
No	OAA: 250 km Offshore ECC: 244 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
East Caithness Cliffs SPA					
No	OAA: 134 km Offshore ECC: 117 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Fair Isle SPA					
No	OAA: 206 km Offshore ECC: 208 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Farne Islands SPA					
No	OAA: 216 km Offshore ECC: 210 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Forth Islands SPA					
No	OAA: 172 km Offshore ECC: 153 km	Gannet (OAA)	Yes: Foraging range of 590 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Foula SPA					
No	OAA: 276 km Offshore ECC: 277 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Fowlsheugh SPA					
No	OAA: 91 km Offshore ECC: 69 km	Herring gull (OAA)	Yes: Foraging range of 85.6 km plus 15 km spatial extent of pressure.		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.4.**

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Handa SPA					
No	OAA: 243 km Offshore ECC: 218 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Hermaness, Saxa Vord and Valla Field SPA					
No	OAA: 343 km Offshore ECC: 344 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
Hoy SPA					
No	OAA: 171 km Offshore ECC: 160 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Loch of Strathbeg SPA and Ramsar					
No	OAA: 35 km Offshore ECC: 8 km	Sandwich tern (OAA)	Yes: Foraging range of 57.5 km		No sandwich tern were detected in the full 2 years of DAS and therefore no collision mortality would be expected for Sandwich tern. There is, therefore, no potential for an AEOI.

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
Marwick Head SPA					
No	OAA: 203 km Offshore ECC: 195 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
North Caithness Cliffs SPA					
No	OAA: 147 km Offshore ECC: 135 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
North Rona and Sula Sgeir SPA					
No	OAA: 310 km Offshore ECC: 290 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km plus 15 km spatial extent of pressure.		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Northumberland Marine SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 209 km Offshore ECC: 199 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		Assessment for the OAA presented in **Section 7.9.3.** Assessment for the foraging SPA presented in **Section 7.9.5.**

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
					There is no AEOI to the kittiwake feature of any breeding SPA and no significant effect on kittiwake at an EIA level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the kittiwake feature of this site.
Noss SPA					
No	OAA: 275 km Offshore ECC: 277 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Outer Firth of Forth and St Andrews Bay Complex SPA (note - this is a foraging SPA and not a breeding site)					
No	OAA: 139 km Offshore ECC: 116 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		Assessment for the OAA presented in **Section 7.9.5.** Assessment for the foraging SPA presented in **Section 7.9.5.** There is no AEOI to the gannet feature of any breeding SPA and no significant effect on gannet at an EIA level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the gannet feature of this site.
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		Assessment for the OAA presented in **Section 7.9.3.**

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
					Assessment for the foraging SPA presented in **Section 7.9.5.** There is no AEOI to the kittiwake feature of any breeding SPA and no significant effect on kittiwake at an EIA level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). Therefore, there is no AEOI of the kittiwake feature of this site.
Rousay SPA					
No	OAA: 197 km Offshore ECC: 192 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
St Abbs Head to Fast Castle SPA					
No	OAA: 192 km Offshore ECC: 177 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Sule Skerry and Sule Stack SPA					
No	OAA: 242 km Offshore ECC: 226 km	Gannet (OAA)	Yes: Foraging range of 509.4 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.5.**
Sumburgh Head SPA					

Is there Direct Overlap between the OAA and the SPA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
No	OAA: 244 km Offshore ECC: 245 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
Troup, Pennan and Lion's Heads SPA					
No	OAA: 54 km Offshore ECC: 26 km	Herring gull (OAA)	Yes: Foraging range of 85.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.4.**
		Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**
West Westray SPA					
No	OAA: 207 km Offshore ECC: 203 km	Kittiwake (OAA)	Yes: Foraging range of 300.6 km		No AEOI as detailed in the Supporting Information section (below). Assessment for the OAA presented in **Section 7.9.3.**

7.9.2 Supporting Information for Ornithology and Collision

7.9.2.1 Operational WTGs and associated infrastructure present a collision risk for seabirds flying in the Offshore Array Area. This includes birds commuting between breeding and foraging sites, migrating birds, and those foraging for food within the Offshore Array Area. Direct collision with Salamander Project infrastructure may result in injury or death, however, it is assumed that all collisions with operational WTGs result in mortality.

7.9.2.2 Collision Risk Modelling (CRM) was undertaken to produce quantitative estimates of the number of collisions per species per season for each year of operation (refer to **Volume ER.A.4, Annex 12.3: Collision Risk Modelling Report**). The SNCB (2014) avoidance rates, as recommended by UK Statutory Nature Conservation Bodies (SNCBs) and NatureScot, are taken forward for assessment for all species. However, as referenced in **Section 7.2.8**, there are revised avoidance rates available (Ozsanlav-Harris *et al.* (2023)). These draw on updated information and, with advice from NatureScot pending on these, have been applied here under the Applicant's approach.

7.9.2.3 The quantification of collision mortality provides an estimate of the total number of birds subject to mortality. For the purposes of this RIAA, it is necessary to estimate which of those birds may be associated with specific SPAs or Ramsar sites, in order to calculate the impact on the population for which each site is designated. This is done through the process of apportionment. Full details of the apportionment process and the resulting proportion of birds associated with each SPA or Ramsar are given in **Volume RP.A.2, Annex 1: Apportioning Report**.

7.9.2.4 Where the apportioned impact is estimated to increase baseline mortality to the population of a SPA or Ramsar by greater than 0.02 percentage points, PVA is subsequently carried out to further investigate the potential effect on the population. Baseline mortality rates used are summarised in **Table 7-41** (Horswill and Robinson, 2015).

Table 7-41 Summary of baseline mortality rates used

Species	Baseline mortality rate (adult)
Kittiwake	14.6%
Herring gull	16.611%
Gannet	8.101%

7.9.2.5 For greater clarity, collision results (and PVAs, where relevant) are presented by species, rather than by SPA/Ramsar. The conclusions for each SPA/Ramsar are summarised in **Table 7-63**, based on the results for each feature being assessed.

7.9.3 Collision Assessment for Kittiwake

7.9.3.1 The assessment for collision mortality for kittiwake is presented in **Table 7-42** to **Table 7-45**.

Table 7-42 Kittiwake seasonal total annual collision mortality (total)

Avoidance rate source	Breeding season	Post-breeding season	Pre-breeding season
SNCB (2014)	23.02	2.21	0.44
Ozsanlav-Harris et al. (2023)	14.68	1.41	0.28

Table 7-43 Kittiwake collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.501	0.6923	7.98	0.018	0.04	0.024	0.01	8.03
Calf of Eday SPA	0.000	0.6923	0.01	0.001	0.00	0.001	0.00	0.01
Cape Wrath SPA	0.004	0.6923	0.06	0.000	0.00	0.000	0.00	0.06
Copinsay SPA	0.002	0.6923	0.03	0.001	0.00	0.001	0.00	0.03
Coquet Island SPA	0.001	0.6923	0.01	0.000	0.00	0.000	0.00	0.01
East Caithness Cliffs SPA	0.071	0.6923	1.14	0.058	0.13	0.077	0.02	1.29
Fair Isle SPA	0.001	0.6923	0.01	0.001	0.00	0.001	0.00	0.01

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Farne Island SPAs	0.007	0.6923	0.11	0.005	0.01	0.007	0.00	0.12
Forth Islands SPA	0.011	0.6923	0.17	0.004	0.01	0.006	0.00	0.18
Foula SPA	0.000	0.6923	0.00	0.000	0.00	0.001	0.00	0.01
Fowlsheugh SPA	0.103	0.6923	1.64	0.013	0.03	0.018	0.00	1.67
Handa SPA	0.004	0.6923	0.06	0.000	0.00	0.000	0.00	0.06
Hoy SPA	0.000	0.6923	0.01	0.001	0.00	0.001	0.00	0.01
Marwick Head SPA	0.001	0.6923	0.02	0.001	0.00	0.001	0.00	0.02
North Caithness Cliffs SPA	0.011	0.6923	0.17	0.015	0.03	0.019	0.00	0.20
North Rona and Sula Sgeir SPA	0.000	0.6923	0.00	0.000	0.00	0.000	0.00	0.00
Noss SPA	0.000	0.6923	0.00	0.001	0.00	0.001	0.00	0.00
Rousay SPA	0.001	0.6923	0.00	0.003	0.01	0.003	0.00	0.01
St. Abb's Head to Fast Castle SPA	0.010	0.6923	0.17	0.005	0.01	0.007	0.00	0.18
Sumburgh Head SPA	0.001	0.6923	0.01	0.000	0.00	0.000	0.00	0.01

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Troup, Pennan and Lion's Head SPA	0.164	0.6923	2.61	0.022	0.05	0.028	0.00	2.66
West Westray SPA	0.003	0.6923	0.05	0.017	0.04	0.023	0.00	0.09

Table 7-44 Kittiwake collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.501	0.6923	5.09	0.018	0.03	0.024	0.01	5.12
Calf of Eday SPA	0.000	0.6923	0.00	0.001	0.00	0.001	0.00	0.01
Cape Wrath SPA	0.004	0.6923	0.04	0.000	0.00	0.000	0.00	0.04
Copinsay SPA	0.002	0.6923	0.02	0.001	0.00	0.001	0.00	0.02
Coquet Island SPA	0.001	0.6923	0.01	0.000	0.00	0.000	0.00	0.01
East Caithness Cliffs SPA	0.071	0.6923	0.73	0.058	0.08	0.077	0.02	0.83

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Fair Isle SPA	0.001	0.6923	0.01	0.001	0.00	0.001	0.00	0.01
Farne Island SPAs	0.007	0.6923	0.07	0.005	0.01	0.007	0.00	0.08
Forth Islands SPA	0.011	0.6923	0.11	0.004	0.01	0.006	0.00	0.12
Foula SPA	0.000	0.6923	0.00	0.000	0.00	0.001	0.00	0.00
Fowlsheugh SPA	0.103	0.6923	1.05	0.013	0.02	0.018	0.00	1.07
Handa SPA	0.004	0.6923	0.04	0.000	0.00	0.000	0.00	0.04
Hoy SPA	0.000	0.6923	0.00	0.001	0.00	0.001	0.00	0.01
Marwick Head SPA	0.001	0.6923	0.01	0.001	0.00	0.001	0.00	0.01
North Caithness Cliffs SPA	0.011	0.6923	0.11	0.015	0.02	0.019	0.00	0.13
North Rona and Sula Sgeir SPA	0.000	0.6923	0.00	0.000	0.00	0.000	0.00	0.00
Noss SPA	0.000	0.6923	0.00	0.001	0.00	0.001	0.00	0.00
Rousay SPA	0.000	0.6923	0.00	0.003	0.00	0.003	0.00	0.00
St. Abb's Head to Fast Castle SPA	0.010	0.6923	0.11	0.005	0.01	0.007	0.00	0.11

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Sumburgh Head SPA	0.001	0.6923	0.01	0.000	0.00	0.000	0.00	0.01
Troup, Pennan and Lion's Head SPA	0.164	0.6923	1.66	0.022	0.03	0.028	0.00	1.69
West Westray SPA	0.003	0.6923	0.03	0.017	0.02	0.023	0.00	0.06

Table 7-45 Kittiwake increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	8.03	60,904	8,892	0.02	PVA Required
Calf of Eday SPA	0.01	3,434	501	0.00	No AEOI
Cape Wrath SPA	0.06	19,400	2,832	0.00	No AEOI
Copinsay SPA	0.03	19,100	2,789	0.00	No AEOI
Coquet Island SPA	0.01	932	136	0.00	No AEOI
East Caithness Cliffs SPA	1.29	65,000	9,490	0.00	No AEOI

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.01	36,320	5,303	0.00	No AEOI
Farne Island SPAs	0.12	8,241	1,203	0.00	No AEOI
Forth Islands SPA	0.18	16,800	2,453	0.00	No AEOI
Foula SPA	0.01	7,680	1,121	0.00	No AEOI
Fowlsheugh SPA	1.67	73,300	10,702	0.00	No AEOI
Handa SPA	0.06	21,464	3,134	0.00	No AEOI
Hoy SPA	0.01	6,000	876	0.00	No AEOI
Marwick Head SPA	0.02	15,400	2,248	0.00	No AEOI
North Caithness Cliffs SPA	0.20	26,200	3,825	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.00	10,000	1,460	0.00	No AEOI
Noss SPA	0.00	14,040	2,050	0.00	No AEOI
Rousay SPA	0.01	9,800	1,431	0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.18	42,340	6,182	0.00	No AEOI
Sumburgh Head SPA	0.01	2,732	399	0.00	No AEOI

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Troup, Pennan and Lion's Head SPA	2.66	63,200	9,227	0.01	No AEOI
West Westray SPA	0.09	47,800	6,979	0.00	No AEOI

Table 7-46 Kittiwake increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	5.12	60,904	8,892	0.01	No AEOI
Calf of Eday SPA	0.01	3,434	501	0.00	No AEOI
Cape Wrath SPA	0.04	19,400	2,832	0.00	No AEOI
Copinsay SPA	0.02	19,100	2,789	0.00	No AEOI
Coquet Island SPA	0.01	932	136	0.00	No AEOI
East Caithness Cliffs SPA	0.83	65,000	9,490	0.00	No AEOI
Fair Isle SPA	0.01	36,320	5,303	0.00	No AEOI
Farne Island SPAs	0.08	8,241	1,203	0.00	No AEOI
Forth Islands SPA	0.12	16,800	2,453	0.00	No AEOI

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Foula SPA	0.00	7,680	1,121	0.00	No AEOI
Fowlsheugh SPA	1.07	73,300	10,702	0.00	No AEOI
Handa SPA	0.04	21,464	3,134	0.00	No AEOI
Hoy SPA	0.01	6,000	876	0.00	No AEOI
Marwick Head SPA	0.01	15,400	2,248	0.00	No AEOI
North Caithness Cliffs SPA	0.13	26,200	3,825	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.00	10,000	1,460	0.00	No AEOI
Noss SPA	0.00	14,040	2,050	0.00	No AEOI
Rousay SPA	0.11	9,800	1,431	0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.01	42,340	6,182	0.00	No AEOI
Sumburgh Head SPA	1.69	2,732	399	0.00	No AEOI
Troup, Pennan and Lion's Head SPA	0.06	63,200	9,227	0.00	No AEOI
West Westray SPA	0.00	47,800	6,979	0.00	No AEOI

Kittiwake Population Viability Analysis

7.9.3.2 Based on the results presented in **Table 7-45**, the collision mortality is predicted to lead to an increase in mortality rate of 0.02 percentage points to the population at Buchan Ness to Collieston Coast SPA when the SNCB avoidance rates are applied. The full details of the PVA is set out in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**. For all other sites and under both scenarios, no PVA is required and therefore no AEOI would result.

7.9.3.3 The PVA modelling concluded that using the collision mortality (i.e. 8.03 additional adult mortalities apportioned to Buchan Ness to Collieston Coast SPA), the median reduction in growth rate of the impacted scenario would be less than 0.0% whilst after the lifespan of the Salamander Project (assumed to be 35 years; see **Section 1.11**), the total population size would be 1.5% smaller than the counterfactual population.

7.9.3.4 Following the recently published report by Ozslanlav-Harris *et al.* (2023), kittiwake have an updated avoidance rate of 0.992, compared to the SNCB (2014) recommended rate of 0.989. The study by Ozslanlav-Harris *et al.* (2023) utilises data from 16 different wind farm sites and is considered a robust resource for use in assessments. It is therefore likely that results generated using the SNCB (2014) rates would overestimate collision impacts and that the impact on the population would be less than 1.5%. Note that under both impacted and unimpacted (counterfactual) scenarios, the median population is predicted to grow slightly over the lifespan of the Salamander Project.

7.9.3.5 This level of impact is considered to be negligible and does not represent an impact that could be said to adversely affect the likelihood of the SPA achieving its conservation objectives.

7.9.4 Collision Assessment for Herring gull

7.9.4.1 The assessment for collision mortality for herring gull is presented in **Table 7-47** to **Table 7-51**.

Table 7-47 Herring gull seasonal total collision mortality (total)

Avoidance rate source	Breeding season	Non-breeding season
SNCB (2014)	0.00	4.23
Ozsanlav-Harris et al. (2023)	0.00	5.06

Table 7-48 Herring gull collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Non-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.824	N/A	0.00	0.222	0.94	0.94

SPA / Ramsar name	Breeding Season			Non-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Fowlsheugh SPA	0.000	N/A	0.00	0.000	0.00	0.00
Troup, Pennan and Lion's Heads SPA	0.083	N/A	0.00	0.058	0.25	0.25

Table 7-49 Herring gull collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Breeding Season			Non-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Buchan Ness to Collieston Coast SPA	0.824	N/A	0.00	0.222	1.12	1.12
Fowlsheugh SPA	0.000	N/A	0.00	0.000	0.00	0.00
Troup, Pennan and Lion's Heads SPA	0.083	N/A	0.00	0.058	0.30	0.30

Table 7-50 Herring gull increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	0.94	8,584	1,425	0.011	No AEOI
Fowlsheugh SPA	0.00	6,380	1,059	0.000	No AEOI
Troup, Pennan and Lion's Heads SPA	0.25	8,400	1,394	0.003	No AEOI

Table 7-51 Herring gull increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Annual adult collision mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	1.12	8,584	1,425	0.013	No AEOI
Fowlsheugh SPA	0.00	6,380	1,059	0.000	No AEOI
Troup, Pennan and Lion's Heads SPA	0.30	8,400	1,394	0.004	No AEOI

7.9.5 Collision Assessment for Gannet

7.9.5.1 The assessment for collision mortality for gannet is presented in **Table 7-52** to **Table 7-56**.

Table 7-52 Gannet seasonal total collision mortality (total)

Avoidance rate source	Breeding season	Post-breeding season	Pre-breeding season
SNCB (2014)	8.16	2.41	0.92
Ozsanlav-Harris et al. (2023)	5.21	1.54	0.58

Table 7-53 Gannet collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Fair Isle SPA	0.021	0.0607	0.01	0.014	0.03	0.022	0.02	0.06
Forth Islands SPA	0.459	0.0607	0.23	0.243	0.59	0.313	0.29	1.10
Hermaness, Saxa Vord and Valla Field SPA	0.044	0.0607	0.02	0.085	0.21	0.137	0.13	0.35
North Rona and Sula Sgeir SPA	0.021	0.0607	0.01	0.004	0.01	0.000	0.00	0.02
Noss SPA	0.034	0.0607	0.02	0.034	0.08	0.055	0.05	0.15
Sule Skerry and Sule Stack SPA	0.028	0.0607	0.01	0.002	0.00	0.000	0.00	0.02

Table 7-54 Gannet collision mortality (individuals) apportioned to each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Breeding Season			Post-breeding season		Pre-breeding season		Annual adult mortality
	Apportioning value	Adult/Immature ratio	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	Apportioning value	Apportioned adult mortality	
Fair Isle SPA	0.021	0.0607	0.01	0.014	0.02	0.022	0.01	0.04
Forth Islands SPA	0.459	0.0607	0.15	0.243	0.37	0.313	0.18	0.70
Hermaness, Saxa Vord and Valla Field SPA	0.044	0.0607	0.01	0.085	0.13	0.137	0.08	0.23
North Rona and Sula Sgeir SPA	0.021	0.0607	0.01	0.004	0.01	0.000	0.00	0.01
Noss SPA	0.034	0.0607	0.01	0.034	0.05	0.055	0.03	0.10
Sule Skerry and Sule Stack SPA	0.028	0.0607	0.01	0.002	0.00	0.000	0.00	0.01

Table 7-55 Gannet increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on SNCB (2014) avoidance rates; Statutory Nature Conservation Bodies approach)

SPA / Ramsar name	Annual adult collision mortality	Site Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.06	2,332	189	0.00	No AEOI
Forth Islands SPA	1.10	43,200	3,499	0.00	No AEOI

SPA / Ramsar name	Annual adult collision mortality	Site Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Hermaness, Saxa Vord and Valla Field SPA	0.35	32,800	2,657	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.02	20,800	1,685	0.00	No AEOI
Noss SPA	0.15	13,720	1,111	0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.02	11,800	956	0.00	No AEOI

Table 7-56 Gannet increase in annual mortality (individuals) at each Special Protection Area or Ramsar (based on Ozsanlav-Harris et al. (2023) avoidance rates; Applicant's approach)

SPA / Ramsar name	Annual adult collision mortality	Site Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.04	2,332	189	0.00	No AEOI
Forth Islands SPA	0.70	32,800	2,657	0.00	No AEOI
Hermaness, Saxa Vord and Valla Field SPA	0.23	32,800	2,657	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.01	20,800	1,685	0.00	No AEOI
Noss SPA	0.10	13,720	1,111	0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.01	11,800	956	0.00	No AEOI

7.9.6 Collision Assessment for Foraging Special Protection Areas

7.9.6.1 Certain SPAs are designated for their importance as foraging grounds to seabirds, but do not themselves contain breeding seabird colonies. The SPAs and features that fall into this category that have been screened in for collision impacts are:

- Northumberland Marine SPA:
  - Kittiwake.
- Outer Firth of Forth & St Andrew's Bay Complex SPA:
  - Kittiwake; and
  - Gannet.

7.9.6.2 As these sites do not contain distinct breeding colonies, impacts cannot be apportioned to them in the same way as for SPAs designated due to breeding populations.

7.9.6.3 However, if breeding populations of relevant species (at both SPA colonies and non-SPA colonies) are maintained, then it would be expected that so too would the population of seabirds using the foraging SPAs be maintained.

7.9.6.4 In addition, where there is no physical overlap between the Project and the SPA, there is no pathway for the Salamander Project to adversely affect the suitability of the SPA as foraging habitat.

7.9.6.5 No AEOI is expected for any feature of any breeding SPAs. No Significant Effect was found to the wider kittiwake, puffin or gannet populations at an EIA level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). The Offshore Array Area and Offshore ECC do not physically overlap either SPA. Therefore, it can be concluded that kittiwake will be maintained as a feature of the Northumberland Marine SPA, and kittiwake and gannet will be maintained as features of the Outer Firth of Forth & St Andrew's Bay Complex SPA.

7.9.7 Conclusion for Ornithology and Collision

7.9.7.1 In reference to **Table 7-40**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA or Ramsar in relation to collision alone and therefore, subject to natural change, the qualifying features of the SPAs and Ramsars will be maintained in the long term.

7.9.8 Combined Distributional Responses and Collision

7.9.8.1 Certain seabird species may be impacted by both distributional responses and collision risk and therefore an assessment of the impact of both pressures acting together is required. It is recognised that assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered the Offshore Array Area. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well. The results presented in this section are therefore considered highly precautionary, especially for species with high distributional response rates (i.e. gannet). Specifically related to gannet, a recent Natural England report (Natural England, 2023) had the aim of delivering an evidence-based method to ensure macro-avoidance behaviour is appropriately accounted for in collision risk models of gannet at offshore wind farms. Macro-avoidance is defined as 'the fraction of birds in flight that are unlikely to enter the turbine array following construction, where there is a risk of collision with rotating blades'. The report recommended a correction to be applied in project level CRM to account for this. The

CRM undertaken for the Salamander Project has not applied macro avoidance and therefore the results are viewed as precautionary (and likely to include some 'double counting').

7.9.8.2 As an indication of the level of precaution inherent in this 'double counting', if all such double counting were removed for a species with a 30% distributional response rate (e.g. kittiwake), effectively the assumption would be that 30% of birds were subject to a distributional response and therefore the number that could be subject to collision would also reduce by 30%, resulting in a 30% reduction in the collision total that could be expected. For a species with 70% distributional response, a corresponding 70% reduction in the collision total could similarly be expected.

7.9.8.3 The apportioned annual mortality rates for distributional response and collision are extracted from the relevant supporting information within **Section 7.3** and **Section 7.9**, respectively.

7.9.9 Combined Distributional Responses and Collision for Kittiwake

7.9.9.1 The combined impact of distributional response and collision for kittiwake is presented in **Table 7-57** and **Table 7-58**.

Table 7-57 Kittiwake increase in mortality (individuals) from distributional response and collision combined at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach (use of SNCB (2014) avoidance rates)

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual adult combined mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	3.883 to 11.650	8.03	11.92 to 19.68	60,904	8,892	0.02 to 0.03	PVA required
Calf of Eday SPA	0.005 to 0.014	0.01	0.01 to 0.02	3,434	501	0.00 to 0.00	No AEOI
Cape Wrath SPA	0.029 to 0.086	0.06	0.09 to 0.15	19,400	2,832	0.00 to 0.00	No AEOI
Copinsay SPA	0.016 to 0.049	0.03	0.05 to 0.08	19,100	2,789	0.00 to 0.00	No AEOI
Coquet Island SPA	0.005 to 0.014	0.01	0.01 to 0.02	932	136	0.00 to 0.00	No AEOI
East Caithness Cliffs SPA	0.603 to 1.808	1.29	1.89 to 3.1	65,000	9,490	0.00 to 0.00	No AEOI
Fair Isle SPA	0.005 to 0.015	0.01	0.02 to 0.03	36,320	5,303	0.00 to 0.00	No AEOI
Farne Islands SPA	0.059 to 0.176	0.12	0.18 to 0.3	8,241	1,203	0.00 to 0.00	No AEOI
Forth Islands SPA	0.085 to 0.255	0.18	0.27 to 0.44	16,800	2,453	0.00 to 0.00	No AEOI
Foula SPA	0.002 to 0.007	0.13	0.14 to 0.14	7,680	1,121	0.00 to 0.00	No AEOI
Fowlsheugh SPA	0.806 to 2.418	1.67	2.48 to 4.09	73,300	10,702	0.00 to 0.01	No AEOI
Handa SPA	0.028 to 0.085	0.06	0.09 to 0.14	21,464	3,134	0.00 to 0.00	No AEOI
Hoy SPA	0.004 to 0.011	0.01	0.01 to 0.02	6,000	876	0.00 to 0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual adult combined mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Marwick Head SPA	0.010 to 0.030	0.02	0.03 to 0.05	15,400	2,248	0.00 to 0.00	No AEOI
North Caithness Cliffs SPA	0.096 to 0.287	0.20	0.30 to 0.49	26,200	3,825	0.00 to 0.00	No AEOI
North Rona and Sula Sgeir SPA	0.000 to 0.000	0.00	0.00 to 0.00	10,000	1,460	0.00 to 0.00	No AEOI
Noss SPA	0.002 to 0.005	0.00	0.00 to 0.01	14,040	2,050	0.00 to 0.00	No AEOI
Rousay SPA	0.003 to 0.009	0.01	0.01 to 0.02	9,800	1,431	0.00 to 0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.085 to 0.254	0.18	0.26 to 0.43	42,340	6,182	0.00 to 0.00	No AEOI
Sumburgh Head SPA	0.006 to 0.019	0.01	0.02 to 0.03	2,732	399	0.00 to 0.00	No AEOI
Troup, Pennan and Lion's Head SPA	1.282 to 3.847	2.66	3.94 to 6.5	63,200	9,227	0.01 to 0.01	No AEOI
West Westray SPA	0.040 to 0.121	0.09	0.13 to 0.21	47,800	6,979	0.00 to 0.00	No AEOI

Table 7-58 Kittiwake increase in mortality (individuals) from distributional response and collision combined at each Special Protection Area or Ramsar (Applicant's approach (use of Ozsanlav-Harris et al. (2023) avoidance rates))

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual total adult mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Buchan Ness to Collieston Coast SPA	3.883	5.12	9.01	60,904	8,892	0.01	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual total adult mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Calf of Eday SPA	0.005	0.01	0.01	3,434	501	0.00	No AEOI
Cape Wrath SPA	0.029	0.04	0.07	19,400	2,832	0.00	No AEOI
Copinsay SPA	0.016	0.02	0.04	19,100	2,789	0.00	No AEOI
Coquet Island SPA	0.005	0.01	0.01	932	136	0.00	No AEOI
East Caithness Cliffs SPA	0.603	0.83	1.43	65,000	9,490	0.00	No AEOI
Fair Isle SPA	0.005	0.01	0.01	36,320	5,303	0.00	No AEOI
Farne Islands SPA	0.059	0.08	0.14	8,241	1,203	0.00	No AEOI
Forth Islands SPA	0.085	0.12	0.20	16,800	2,453	0.00	No AEOI
Foula SPA	0.002	0.09	0.09	7,680	1,121	0.00	No AEOI
Fowlsheugh SPA	0.806	1.07	1.87	73,300	10,702	0.00	No AEOI
Handa SPA	0.028	0.04	0.07	21,464	3,134	0.00	No AEOI
Hoy SPA	0.004	0.01	0.01	6,000	876	0.00	No AEOI
Marwick Head SPA	0.010	0.01	0.02	15,400	2,248	0.00	No AEOI
North Caithness Cliffs SPA	0.096	0.13	0.23	26,200	3,825	0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual total adult mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
North Rona and Sula Sgeir SPA	0.000	0.00	0.00	10,000	1,460	0.00	No AEOI
Noss SPA	0.002	0.00	0.00	14,040	2,050	0.00	No AEOI
Rousay SPA	0.003	0.00	0.01	9,800	1,431	0.00	No AEOI
St. Abb's Head to Fast Castle SPA	0.085	0.11	0.20	42,340	6,182	0.00	No AEOI
Sumburgh Head SPA	0.006	0.01	0.01	2,732	399	0.00	No AEOI
Troup, Pennan and Lion's Head SPA	1.282	1.69	2.98	63,200	9,227	0.01	No AEOI
West Westray SPA	0.040	0.06	0.10	47,800	6,979	0.00	No AEOI

Kittiwake Population Viability Analysis

7.9.9.2 Based on the results presented in **Table 7-57**, the upper end of the SNCB approach for combined distributional response and collision mortality is predicted to lead to an increase in mortality rate of greater than 0.02 percentage points to the population at Buchan Ness to Collieston Coast SPA when the SNCB avoidance rates are applied. The full details of the PVA is set out in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**. For all other sites and all other scenarios, no PVA is required and no AEOI will result.

7.9.9.3 The PVA modelling concluded that using the upper end of the combined distributional response and collision mortality based on the SNCB approach (i.e. 19.68 additional adult mortalities per year), the reduction in growth rate of the impacted scenario would be 0.1% whilst after the lifespan of the Salamander Project, the total population size would be 3.7% smaller than the counterfactual population. Note that under both impacted and unimpacted (counterfactual) scenarios, the population is predicted to remain fairly stable over the lifespan of the Salamander Project. The baseline population used for the PVA is 22,590 individuals; under the no impact scenario this grows very slightly to a median population of 23,358 after 35 years whilst under the upper end of the SNCB approach the population remains stable, with a median population of 22,510 individuals after 35 years.

7.9.9.4 Following the recently published report by Ozslanlav-Harris *et al.* (2023), kittiwake have an updated avoidance rate of 0.992, compared to the SNCB (2014) recommended rate of 0.989. The study by Ozslanlav-Harris *et al.* (2023) utilises data from 16 different wind farm sites and is considered a robust resource for use in assessments. It is therefore likely that results generated using the SNCB (2014) rates would overestimate impacts and that the impact on the population would be less than 3.7%. The application of this in the Applicant's approach (**Table 7-58**) does not trigger the threshold requiring PVA and therefore a conclusion of no AEOI is drawn for this approach.

7.9.9.5 Therefore, whether considering the SNCB or Applicant's approach, this level of impact is considered to be negligible and does not represent an impact that could be said to adversely affect the likelihood of the SPA achieving its conservation objectives.

7.9.10 Combined Distributional Responses and Collision for Gannet

7.9.10.1 The combined impact of distributional response and collision for gannet is presented in **Table 7-59** and **Table 7-60**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. The threshold requiring PVA has not been met for any site. Additional context on that risk is provided in **Section 7.2.8**.

Table 7-59 Gannet increase in mortality (individuals) from distributional response and collision combined at each Special Protection Area or Ramsar (Statutory Nature Conservation Bodies approach (use of SNCB (2014) avoidance rates))

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual adult combined mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.061 to 0.183	0.06	0.13 to 0.25	2,332	189	0.00 to 0.01	No AEOI
Forth Islands SPA	0.894 to 2.682	1.10	1.99 to 3.78	43,200	3,499	0.00 to 0.01	No AEOI
Hermaness, Saxa Vord and Valla Field SPA	0.363 to 1.089	0.35	0.72 to 1.44	32,800	2,657	0.00 to 0.00	No AEOI
North Rona and Sula Sgeir SPA	0.004 to 0.012	0.02	0.02 to 0.03	20,800	1,685	0.00 to 0.00	No AEOI
Noss SPA	0.149 to 0.446	0.15	0.30 to 0.60	13,720	1,111	0.00 to 0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.005 to 0.016	0.02	0.02 to 0.03	11,800	956	0.00 to 0.00	No AEOI

Table 7-60 Gannet increase in mortality (individuals) from distributional response and collision combined at each Special Protection Area or Ramsar (Applicant's approach (use of Ozsanlav-Harris et al. (2023) avoidance rates))

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual adult combined mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Fair Isle SPA	0.061	0.04	0.10	2,332	189	0.00	No AEOI
Forth Islands SPA	0.894	0.70	1.59	43,200	3,499	0.00	No AEOI

SPA / Ramsar name	Annual adult distributional response mortality	Annual adult collision mortality	Annual adult combined mortality	SPA Citation Population	Baseline mortality	Increase in mortality rate (percentage points)	Conclusion
Hermaness, Saxa Vord and Valla Field SPA	0.363	0.23	0.59	32,800	2,657	0.00	No AEOI
North Rona and Sula Sgeir SPA	0.004	0.01	0.02	20,800	1,685	0.00	No AEOI
Noss SPA	0.149	0.10	0.24	13,720	1,111	0.00	No AEOI
Sule Skerry and Sule Stack SPA	0.005	0.01	0.02	11,800	956	0.00	No AEOI

7.9.11 Combined Distributional Responses and Collision for Foraging Special Protection Areas

7.9.11.1 Certain SPAs are designated for their importance as foraging grounds to seabirds, but do not themselves contain breeding seabird colonies. The SPAs and features that fall into this category that have been screened in for both distributional responses and collision impacts are:

- Northumberland Marine SPA:
  - Kittiwake.
- Outer Firth of Forth & St Andrew's Bay Complex SPA:
  - Kittiwake; and
  - Gannet.

7.9.11.2 As these sites do not contain distinct breeding colonies, impacts cannot be apportioned to them in the same way as for SPAs designated due to breeding populations.

7.9.11.3 However, if breeding populations of relevant (at both SPA colonies and non-SPA colonies) are maintained, then it would be expected that so too would the population of seabirds using the foraging SPAs be maintained.

7.9.11.4 In addition, where there is no physical overlap between the Project and the SPA, there is no pathway for the Salamander Project to adversely affect the suitability of the SPA as foraging habitat.

7.9.11.5 No AEOI is expected for any feature of any breeding SPAs. No Significant Effect was found to the wider kittiwake, puffin or gannet populations at an EIA level (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**). The Offshore Array Area and Offshore ECC do not physically overlap either SPA. Therefore, it can be concluded that kittiwake will be maintained as a feature of the Northumberland Marine SPA, and kittiwake and gannet will be maintained as features of the Outer Firth of Forth & St Andrew's Bay Complex SPA.

7.9.12 Conclusion for Ornithology and Combined Distributional Responses and Collision

7.9.12.1 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA or Ramsar in relation to combined distributional responses and collision from the Project alone and therefore, subject to natural change, the kittiwake and gannet features of the SPAs listed above will be maintained in the long term.

7.10 Assessment for Ornithology and Indirect Physical Impact (to habitat)

7.10.1 Assessment Summary

7.10.1.1 The HRA Screening identified one SPA and Ramsar and a total of two qualifying features from the SPA and Ramsar with potential for LSE from indirect physical impact (to habitat).

7.10.1.2 The assessment for ornithology and indirect physical impact (to habitat) is presented below in **Table 7-61,** to provide a clear documentation of the assessment for the site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

Table 7-61 Consideration of the Potential for an Adverse Effect Alone for Ornithology with respect to Indirect Physical Impact (to habitat)

Is there Direct Overlap between the Salamander Project and the OAA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
SPA Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar					
No	OAA: 41 km Offshore ECC: 13 km	Eider (Offshore ECC)	Yes: Foraging range of 21.5 km	None required.	**To avoid deterioration of the habitats of the qualifying species** The pressure is screened in for the Offshore ECC only, with the SPA and Ramsar being coastal in location. Key sources of interaction between the Offshore ECC and physical processes relate to activities such as seabed preparation or cable burial. The potential to affect the conservation objective in terms of the habitat is relevant for this pressure (an indirect pressure for the bird species). The assessment here is therefore related to the potential for an indirect impact on the habitats of the birds. The EIAR assesses the physical process impacts of the Salamander Project (**Volume ER.A.3, Chapter 7: Marine Physical Processes**) and concluded, with respect to the Offshore ECC, localised changes at most (10s of metres) to sediment transport, coastal morphology and water column processes. Such a degree of change is insufficient to reach the designated sites and would have the potential to have a negligible impact on a very small percentage of the supporting habitat available. Therefore, it is concluded that there is no potential for an adverse effect with respect to indirect impact on the habitats of the birds for any of the European sites and/or their qualifying ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.
		Little tern (Offshore ECC)	Yes: Foraging range of 5 km (identified as being within the foraging range plus 15 km buffer)		

Is there Direct Overlap between the Salamander Project and the OAA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
					To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained The pressure is not relevant with respect to significant disturbance to species or viability, the latter relating to activities with the potential to kill, injure or significantly disturb species. The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. No further information required to demonstrate that the conservation objective will be maintained.

7.10.2 Conclusion for Ornithology and Indirect Physical Impact (to habitat)

7.10.2.1 In reference to **Table 7-61**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for the SPA and Ramsar in relation to indirect physical impacts alone and therefore, subject to natural change, the qualifying features of the SPA and Ramsar will be maintained in the long term.

7.11 Assessment for Ornithology and Suspended Sediment

7.11.1 Assessment Summary

7.11.1.1 The HRA Screening identified one SPA and Ramsar and a total of two qualifying features across that SPA and Ramsar with potential for LSE from suspended sediment.

7.11.1.2 The assessment for ornithology and suspended sediment is presented below in **Table 7-62**, to provide a clear documentation of the assessment per site and per feature in the context of the relevant conservation objectives. A summary of the screening conclusions for all sites (including the features and pressures screened in) is provided in **Appendix A: 'Update to Stage 3 Screening for Assessment in Stages 4 and 5'**. The pressure considered here is screened in for all project phases.

Table 7-62 Consideration of the potential for an adverse effect alone for ornithology with respect to suspended sediment

Is there Direct Overlap between the Salamander Project and the OAA? (distances are to the SPA)		**Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?**		**Relevant Mitigation?**	**Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)**
SPA Conservation Objective: To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained.					
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar					
No	OAA: 41 km Offshore ECC: 13 km	Eider (Offshore ECC)	Yes: Foraging range of 21.5 km	None required.	**To avoid deterioration of the habitats of the qualifying species** The pressure is screened in for the Offshore ECC only, with the SPA and Ramsar being coastal in location. Key sources of interaction between the Offshore ECC and suspended sediment relate to activities such as seabed preparation or cable burial. The potential to affect the conservation objective in terms of the habitat is relevant for this pressure (an indirect pressure for the bird species). The assessment here is therefore related to the potential for an indirect impact on the habitats of the birds. The EIAR assesses the physical process impacts of the Salamander Project (**Volume ER.A.3, Chapter 7: Marine Physical Processes**) and concluded, with respect to the Offshore ECC, localised and short term changes in suspended sediment at most (likely in line with levels released during storm events). Such a degree of change is insufficient to reach the designated sites and would have the potential to have a negligible impact on a very small percentage of the supporting habitat available or bird prey. Therefore, it is concluded that there is no potential for an AEOI with respect to suspended sediment for any of the European sites and/or their qualifying ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.
		Little tern (Offshore ECC)	Yes: Foraging range of 5 km (identified as being within the foraging range plus 15 km buffer)		

Is there Direct Overlap between the Salamander Project and the OAA? (distances are to the SPA)		Is there Direct Overlap between the Salamander Project Zone of Influence and the Site and/or connectivity?		Relevant Mitigation?	Conclusion on the potential for an AEOI on the Conservation Objectives (conservation objectives identified in bold)
					To avoid … significant disturbance to the qualifying species… and to ensure that the population of the species as a viable component of the site and distribution of the species within the site is maintained. The potential to affect the conservation objective in terms of significant disturbance to species or viability (activities with the potential to kill, injure or significantly disturb species) through a potential indirect impact on prey or directly through water clarity (in terms of visibility for diving birds). The location of the Project relative to the SPAs screened in is such that the distribution of species in the sites will not be directly affected. The assessment here is therefore related to the potential for an indirect impact on the birds or prey and potential direct impact of water clarity on diving birds. The EIAR assesses the physical process impacts of the Salamander Project (**Volume ER.A.3, Chapter 7: Marine Physical Processes**) and concluded, with respect to the Offshore ECC, localised and short term changes in suspended sediment at most (likely in line with levels released during storm events). Such a degree of change is insufficient to reach the designated sites and would have the potential to have a negligible impact on a very small percentage of the supporting habitat available or bird prey. Therefore, it is concluded that there is no potential for an AEOI with respect to suspended sediment for any of the European sites and/or their qualifying ornithology features screened in for assessment and no measurable impact to carry forward for in-combination assessment.

7.11.2 Conclusion for Ornithology and Suspended Sediment

7.11.2.1 In reference to **Table 7-62**, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SPA in relation to suspended sediments alone and therefore, subject to natural change, the qualifying features of these SPAs will be maintained in the long term.

7.12 Conclusion for Ornithology for the Project Alone

7.12.1.1 A summary of the conclusions for the ornithology assessment for the Salamander Project alone is provided below in **Table 7-63**, including the potential for the pressure to contribute to an in-combination effect (drawing on the parameters set out in **Section 2.3.5**) and taking account of the without prejudice and full derogation cases presented by Berwick Bank, Green Volt and West of Orkney. Where that applies, the pressure is considered with other plans and projects in-combination in **Section 11**. The conclusion of no AEOI applies regardless of the approach to assessment applied (the Applicant or the SNCB).

Table 7-63 Summary of the Ornithology Assessment for the Project Alone)

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
Distributional response	Buchan Ness to Collieston Coast SPA	Kittiwake	No AEOI	Yes – both approaches	Yes - SNCB approach No – Applicant's approach	Yes
		Guillemot	No AEOI	Yes – both approaches		No
		Shag (offshore ECC only)	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
	Calf of Eday SPA	Kittiwake	No AEOI	No – both approaches		No
	Cape Wrath SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches		No
	Copinsay SPA	Kittiwake	No AEOI	No – both approaches		No
		Guillemot	No AEOI	No– both approaches		No
	Coquet Island SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	Yes^ - SNCB high approach only No – Applicant's approach	No – both approaches	No

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
	East Caithness Cliffs SPA	Kittiwake	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	Yes
		Razorbill	No AEOI	No– both approaches		Yes
	Fair Isle SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches		No
		Gannet	No AEOI	No – both approaches		No
	Farne Islands SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	No
	Forth Islands SPA	Kittiwake	No AEOI	No – both approaches		Yes
		Puffin	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	Yes
		Gannet	No AEOI	Yes - SNCB approach	No – both approaches	Yes

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
				No – Applicant's approach		
	Foula SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches		No
	Fowlsheugh SPA	Kittiwake	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	No
		Guillemot	No AEOI	No– both approaches		Yes (however no birds apportioned therefore no requirement to progress to in-combination)
		Razorbill	No AEOI	Yes - SNCB approach No – Applicant's approach	Yes - SNCB approach No – Applicant's approach	Yes
	Handa SPA	Kittiwake	No AEOI	No – both approaches		No
	Hermaness, Saxa Vord and Valla Field SPA	Gannet	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	Yes

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
	Hoy SPA	Kittiwake	No AEOI	No – both approaches		No
		Guillemot (Offshore ECC only)	No AEOI	No– both approaches		No
		Puffin	No AEOI	No – both approaches		No
	Marwick Head SPA	Kittiwake	No AEOI	No – both approaches		No
	North Caithness Cliffs SPA	Kittiwake	No AEOI	No – both approaches		Yes
		Razorbill (offshore ECC only)	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches		No
	North Rona and Sula Sgeir SPA	Kittiwake	No AEOI	No – both approaches		No
		Gannet	No AEOI	No – both approaches		No
	Northumberland Marine	Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches (foraging SPA)		No
	Noss SPA	Kittiwake	No AEOI	No – both approaches		No
		Puffin (offshore ECC only)	No AEOI	No – both approaches		No

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
		Gannet	No AEOI	No – both approaches		No
	Outer Firth of Forth and St Andrews	Gannet	No AEOI	No – both approaches		Yes
		Kittiwake	No AEOI	No – both approaches		No
		Puffin	No AEOI	No – both approaches (foraging SPA)		No
	Rousay SPA	Kittiwake	No AEOI	No – both approaches		No
	St. Abb's Head to Fast Castle SPA	Kittiwake	No AEOI	No – both approaches		Yes
	Sule Skerry and Sule Stack SPA	Puffin	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	No
		Gannet	No AEOI	No – both approaches		No
	Sumburgh Head SPA	Kittiwake	No AEOI	No – both approaches		No
	Troup, Pennan and Lion's Head SPA	Kittiwake	No AEOI	Yes – both approaches		Yes
		Guillemot	No AEOI	Yes– both approaches		No
		Razorbill	No AEOI	Yes - SNCB approach	Yes - SNCB approach	Yes

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
				No – Applicant's approach	No – Applicant's approach	
	West Westray SPA	Kittiwake	No AEOI	No – both approaches		No
Entanglement	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Underwater noise	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Above water noise	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Toxic contamination	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Light	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Collision	Buchan Ness to Collieston Coast SPA	Kittiwake	No AEOI	Yes - both approaches	Yes – SNCB approach No – Applicant's approach	Yes
		Herring gull	No AEOI	No – SNCB approach Yes – Applicant's approach	No – both approaches	No
	Calf of Eday SPA	Kittiwake	No AEOI	No – both approaches		No

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
	Cape Wrath SPA	Kittiwake	No AEOI	No – both approaches		No
	Copinsay SPA	Kittiwake	No AEOI	No – both approaches		No
	Coquet Island SPA	Kittiwake	No AEOI	No – both approaches		No
	East Caithness Cliffs SPA	Kittiwake	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	Yes
	Fair Isle SPA	Kittiwake	No AEOI	No – both approaches		No
		Gannet	No AEOI	No – both approaches		No
	Farne Islands SPA	Kittiwake	No AEOI	No – both approaches		Yes
	Forth Islands SPA	Kittiwake	No AEOI	No – both approaches		Yes
		Gannet	No AEOI	Yes - SNCB approach No – Applicant's approach	No – both approaches	Yes
	Foula SPA	Kittiwake	No AEOI	No – both approaches		No
	Fowlsheugh SPA	Kittiwake	No AEOI	Yes – both approaches	No – both approaches	Yes

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
		Herring gull	No AEOI	No – both approaches		No
	Handa SPA	Kittiwake	No AEOI	No – both approaches		No
	Hermaness, Saxa Vord and Valla Field SPA	Gannet	No AEOI	No both approaches		Yes
	Hoy SPA	Kittiwake	No AEOI	No – both approaches		No
	Marwick Head SPA	Kittiwake	No AEOI	No – both approaches		No
	North Caithness Cliffs SPA	Kittiwake	No AEOI	No – both approaches		Yes
	North Rona and Sula Sgeir SPA	Kittiwake	No AEOI	No – both approaches		No
		Gannet	No AEOI	No – both approaches		No
	Northumberland Marine	Kittiwake	No AEOI	No – both approaches		No
	Noss SPA	Kittiwake	No AEOI	No – both approaches		No
		Gannet	No AEOI	No – both approaches		No
	Outer Firth of Forth and	Gannet	No AEOI	No – both approaches (foraging SPA)		Yes

Pressure	Site	Species	Conclusion of AEOI	Inclusion in-combination?		
				Project Mortality >1 individual per annum	Increase in baseline mortality ≥0.02 percentage points	Subject to a Current Derogation Case
	St Andrews Complex SPA	Kittiwake	No AEOI	No – both approaches		No
	Rousay SPA	Kittiwake	No AEOI	No – both approaches		No
	St. Abb's Head to Fast Castle SPA	Kittiwake	No AEOI	No – both approaches		Yes
	Sule Skerry and Sule Stack SPA	Gannet	No AEOI	No – both approaches		No
	Sumburgh Head SPA	Kittiwake	No AEOI	No – both approaches		No
	Troup, Pennan and Lion's Head SPA	Kittiwake	No AEOI	Yes - both approaches	No – both approaches	Yes
		Herring gull	No AEOI	No – both approaches		No
	West Westray SPA	Kittiwake	No AEOI	No – both approaches		No
Indirect physical impact (to habitat)	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		
Suspended sediment	All sites	All species	No AEOI	No measurable impact and therefore no need to progress to the in-combination assessment.		

^ note that for the high end of the SNCB parameters (60% displacement, 5% mortality) the potential mortality would be 1.096 birds. However, given the precaution inherent in those parameters (as outlined in **Section 7.2**), the inclusion of puffin in the assemblage and not as a named feature, the apportioned value for the 60% displacement/3% mortality (0.71 birds) and the Applicant's approach of 50% displacement/1% mortality (0.24 birds), combined with the lack of any derogation case for the site in the public domain, the potential contribution from the Salamander Project to any in-combination effect is deemed inconsequential. For potential in-combination in any case, only the Berwick Bank RIAA (SSE Renewables, 2022) identified any puffin in the breeding season for Coquet Island, specifically 1-6 birds depending on the approach applied to assessment.

8 The Project In-combination with other Plans and Projects Benthic Ecology Assessment

8.1.1.1 HRA Stage 3 Screening did not identify any potential for LSE to an Annex I habitat and that conclusion was agreed with following consultation (**Table 1-2**). No trivial or inconsequential impacts were identified during the preparation of the EIAR or the Offshore RIAA.

8.1.1.2 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives for any SAC in relation to Annex I benthic habitat features either alone and or in-combination with other plans or projects and therefore, subject to natural change, the designated sites will be maintained in the long term.

9 The Project In-combination with other Plans and Projects Marine Mammal Assessment

9.1.1.1 Drawing on the assessment of marine mammals for the Salamander Project alone (**Section 5)**, especially in **Table 5-7**), it is determined that the Salamander Project has the potential for a contribution to an in-combination effect with respect to the following pressures:

- Disturbance from underwater noise during piling for anchors (construction); and
- Entanglement (operation & maintenance).

9.1.1.2 The plans and projects to consider in-combination for the marine mammal assessment are provided in **Table 2-2** (noting that not all of these projects have an accompanying EIAR and therefore will not have a quantified impact assessment in the public domain), with the identifies timeframe for the relevant works (that may contribute to an in-combination effect from underwater noise) highlighted for each project. The potential for an in-combination effect is presented below.

9.2 Marine Mammal In-combination Assessment for the Moray Firth Special Area of Conservation

9.2.1 Underwater Noise In-combination

9.2.1.1 **Table 5-7** summarises the conclusions of the assessment for marine mammals alone, including where there is potential to contribute to an in-combination effect. With respect to underwater noise, that potential relates to the conservation objective that addresses risk of significant disturbance only, with the assessment presented below.

9.2.1.2 The EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) has considered the number of bottlenose dolphin that may be disturbed on an annual basis by projects across the period 2023-2031. Of the projects considered, several fall beyond the 200 km screening distance applied for the Salamander Project. Those that do fall within that range are identified in **Table 2-2** and repeated below for inclusion in the in-combination assessment (noting that for many of these projects, no quantitative assessment is available).

- Green Volt (EIAR available);
- Pentland (EIAR available);
- Seagreen 1A (EIAR available);
- Moray West (EIAR available);
- Berwick Bank (EIAR available);
- Inch Cape (EIAR available);
- Neart na Gaoithe (EIAR available);
- Muir Mhor (Scoping Report available);
- Marram Wind (Scoping Report available);
- Buchan (Scoping Report available);
- Ossian (Scoping Report available);
- Caledonia (Scoping Report available);

- Cenos (Scoping Report available);
- Campion Wind (pre Scoping);
- Bowdun (pre Scoping);
- Scaraben (pre Scoping);
- Broadshore (pre Scoping);
- Sinclair (pre Scoping);
- Stromar (pre Scoping);
- Seismic airgun survey.

9.2.1.3 The EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) includes additional projects in its cumulative assessment, to assess potential impacts across the combined CES and GNS Mus and therefore considers bottlenose dolphin outside the Moray Firth SAC. A key point to the consideration of disturbance from underwater noise is that it is temporally limited (in that sound dissipates and does not accumulate in the environment), with indicative piling schedules for projects assessed in-combination to account for this. For the Salamander Project, the indicative construction programme is outlined in **Section 1.11**, with offshore construction to take place within a 30 month window. Within that window, the maximum duration expected for offshore construction is 18 months (excluding pre-construction surveys) with the indicative piling schedule in that overall window falling within 2028. Pre-construction noise, related to geophysical or seismic survey or UXO clearance, may occur before that timeframe. However, as noted in the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) a number of underwater noise pressures have been excluded from the cumulative assessment in the EIAR (and therefore also excluded from the Offshore RIAA) for the following reasons:

- Auditory injury (PTS): where PTS may result from activities such as pile driving and UXO clearance, suitable mitigation will be put in place to minimise injury risk to marine mammals;
- Disturbance from geophysical surveys: it is expected that disturbance impacts will be minimal, highly localised and over a limited duration (negligible significance);
- Disturbance from UXOs: it is expected that going forward, most, if not all, UXO clearance will be conducted using low-order deflagration techniques, and therefore disturbance impacts will be minimal, highly localised and over an extremely short duration (negligible significance); and
- Disturbance from other construction activities: highly localised and negligible significance.

9.2.1.4 Therefore, the potential for underwater noise to affect the bottlenose dolphin feature of the Moray Firth SAC in-combination is limited to disturbance from underwater noise during construction (piling) of offshore wind farm developments. In addition to this, it has been precautionarily assumed that seismic airgun surveys associated with oil and gas projects have the potential to occur within the marine mammal MUs, though information on planned projects is limited. Given the potential disturbance impacts that these surveys could result in, it is recommended in the EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) that they are included illustratively in marine mammal CEAs for underwater noise disturbance. The time period considered for disturbance from underwater noise from construction activities is 2023-2031 inclusive. This allows for the quantification of impacts to the MUs prior to the construction of the Salamander Project (since the baseline was collated), during the potential construction window for the Salamander Project (indicative piling in 2028) and immediately after piling activities. It therefore accounts for the entirety of the potential disturbance in-combination within that timeframe and enables a conclusion to be drawn on the consequences of the combined disturbance.

9.2.1.5 Of the plans and projects identified in-combination for the Salamander Project for marine mammals (**Table 2-2**) none have a piling window timeframe that includes 2028, with the exception of the 'seismic airgun survey'. The latter is included within the EIAR on a precautionary basis only (and not linked to applications for such surveys), on the assumption that some form of airgun survey might occur across the combined CES and GNS MU each year. The EIAR calculated that such a survey could result in the disturbance of 10 bottlenose dolphin across the combined CES and GNS MUs. As no such surveys are currently planned within 200 km of the Moray Firth SAC for 2028, the total has not been included in-combination here.

9.2.1.6 Across the timeframe of disturbance from in-combination projects (2023-2031), the Salamander Project will contribute to the overall level of disturbance. However, the assessment for the Salamander Project alone includes consideration of iPCoD modelling and therefore has considered the consequences of disturbance from underwater noise from the Salamander Project on the population trajectory of the relevant population of bottlenose dolphin. The conclusions of the model found no long term impacts on the population. In addition, the EIAR considered the cumulative effect from pile driving from multiple projects (including all those identified in **Table 2-2**) occurring at a moderate frequency or intensity across the period 2023-2031, which it found to affect a moderate proportion of the bottlenose dolphin population across the CES and GNS MU with the potential to cause short to medium term changes in the population from baseline conditions[19]. The low sensitivity of bottlenose dolphin to disturbance from pile driving activities resulted in a conclusion of an impact of minor significance, which is not significant in EIA terms. That conclusion of minor significance cumulatively across the relevant timeframe, combined with the project alone modelling that concluded no long term impacts as a consequence of the Salamander Project alone, result in a conclusion of no long term effect on the bottlenose dolphin population from piling by all projects within the period 2023-2031 and no potential for an AEOI.

9.2.1.7 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives of bottlenose dolphin as a feature of the Moray Firth SAC either alone and or in-combination with other plans or projects and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to underwater noise.

9.2.2 Entanglement In-combination

9.2.2.1 **Table 5-7** summarises the conclusions of the assessment for marine mammals alone, including where there is potential to contribute to an in-combination effect. With respect to entanglement, that potential relates to the conservation objective that addresses viability (resulting from the potential for death or injury to result from entanglement), with the assessment presented below.

9.2.2.2 The EIAR (**Volume ER.A.3, Chapter 11: Marine Mammals**) has identified 12 floating Offshore wind farms for potential in-combination assessment for primary or secondary entanglement, the majority of which have no assessment available (being at Scoping stage or earlier). The projects identified are all included in **Table 2-2** but for clarity (as many of the projects included in **Table 2-2** are fixed bottom and therefore would not contribute to an in-combination risk from entanglement) are confirmed below:

- Green Volt (EIAR available);

[19] Note: no population modelling has been conducted for this CEA due to a lack of detailed information on potential piling schedules across projects

- Pentland (EIAR available);
- Muir Mhor (Scoping Report available);
- Marram Wind (Scoping Report available);
- Campion Wind (pre Scoping);
- Scaraben (pre Scoping);
- Buchan (Scoping Report available);
- Broadshore (pre Scoping);
- Ossian (Scoping Report available);
- Caledonia (pre Scoping); and
- Stromar (pre Scoping).

9.2.2.3 Despite the acknowledged uncertainty in the EIAR as regards the risks of secondary entanglement, it is anticipated that (similar to the approach proposed by the Salamander Project) mitigation will be in place with respect to those other projects to monitor the mooring lines and floating dynamic cables to confirm the structural integrity, identify the presence/absence of marine debris and take action to remove any such debris, if deemed necessary. The application of project level mitigation reduces the project level risk and potential contribution to any in-combination total to negligible levels and therefore the viability of bottlenose dolphin throughout the Moray Firth SAC will be maintained with no adverse effect to bottlenose dolphin.

9.2.2.4 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives of bottlenose dolphin as a feature of the Moray Firth SAC either alone and or in-combination with other plans or projects and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term with respect to entanglement.

9.3 Conclusion for Marine Mammals for the Project In-combination

9.3.1.1 The inclusion of project level mitigation ensures that the Salamander Project will not result in an AEOI to the conservation objectives of the Moray Firth SAC alone or in-combination and therefore, subject to natural change, the bottlenose dolphin feature of the Moray Firth SAC will be maintained in the long term.

10 The Project In-combination with other Plans and Projects Migratory Fish and Freshwater Pearl Mussel Assessment

10.1.1.1 HRA Stage 3 Screening did not identify any potential for LSE to migratory fish or FWPM and that conclusion is in line with the statutory stakeholder responses received during consultation (**Table 1-2**). No trivial or inconsequential impacts were identified during the preparation of the EIAR or the Offshore RIAA.

10.1.1.2 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives of any migratory fish or FWPM feature of an SAC either alone and or in-combination with other plans or projects and therefore, subject to natural change, the designated sites will be maintained in the long term.

11 The Project In-combination with other Plans and Projects Ornithology Assessment

11.1.1.1 Drawing on the assessment for the Salamander Project alone (**Section 7**), it is clear that the Salamander Project has the potential for a measurable impact with respect to the following pressures during the operation and maintenance phase:

- Distributional responses (displacement and barrier effect); and
- Collision.

11.1.1.2 The assessment is presented in several ways. Firstly, the Applicant's approach is presented (with this forming the basis for the conclusions of the assessment). The Applicant's approach specifically draws on the distributional response parameters provided in **Table 7-3** and for collision applies the generic avoidance rates provided in Ozsanlav-Harris *et al*. (2023) (**Section 7.2.8**). Secondly, the assessment is provided following the NatureScot parameters. For distributional response, these are provided in **Table 7-3** and for collision are in line with NatureScot guidance as presented in **Volume ER.A.4, Annex 12.3: Collision Risk Modelling Report**. It should be noted that for kittiwake and gannet, the Applicant's approach to distributional response is the same as the low end of the SNCB parameters. In addition, as requested by NatureScot (**Table 1-2**), the assessment is presented with and without the contribution (where applicable) from Berwick Bank.

11.1.1.3 Three key points that are outside the control of the Applicant are also noted here. Firstly relates to the colony count data applied in PVA (**Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**). The RIAA has applied the updated colony count data referenced in **Section 7.2.2** and therefore uses the most recent colony count data available for SPAs. These data were published in December 2023 and will therefore represent a potential change from projects that predated the availability of these counts (and therefore potentially result in apparent discrepancies where previous project level assessments applied PVA on older colony count data, especially if the new colony count applied here is substantially larger or smaller than the older values).

11.1.1.4 Secondly, is Highly Pathogenic Avian Influenza (HPAI). It is understood that advice from NatureScot on how to take account of HPAI within an assessment is currently pending. The impact of the short, medium and long term effects of the HPAI outbreak on seabird colony abundance and vital rates (productivity and survival) on UK breeding colonies is unclear. It is noted that RSPB have published some post HPAI colony counts[20], but not for all colonies under consideration here, and therefore these have not been applied. It is also unclear currently how the distribution and abundance of seabirds at sea has been affected as a result of the HPAI outbreak. The disease has affected over 60 bird species in the UK, including species such as gannet, razorbill, guillemot, puffin, Manx shearwater, fulmar and small and large gull species (Pearce-Higgins et al., 2023). HPAI has affected gannet and great skua colonies profoundly, with both species now facing increased risk of global extinction (Pearce-Higgins et al., 2023) (the UK supports 55.6% of the global gannet population and 60% of the global great skua population; JNCC, 2021). Great skua is not screened into the HRA for the Salamander Project, however gannet is.

11.1.1.5 In the absence of updated SNCB guidance, the assessment approach with regards to HPAI aligns as closely as possible to Natural England's interim guidance that was submitted as part of Natural England's Representation, submitted in response to the Ossian Scoping Report (MD-LOT, 2023). Therefore, all quantitative assessment has been carried out without any adjustments in respect to HPAI. This reflects an

[20] https://rspb.org.uk/birds-and-wildlife/seabird-surveys-project-report

assumption that reductions in population or colony sizes would translate to proportional reductions in at-sea densities and hence predicted mortalities from the Salamander Project.

11.1.1.6 Thirdly and finally is the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024. The intent and expectation of the prohibition is to increase prey availability that in turn will support seabird species. The potential consequences of this (and of HPAI) cannot currently be included in PVA and are therefore not able to be taken into account within this assessment.

11.1.1.7 In order to ensure the assessment presented within this report is proportionate, an in-combination assessment has only been carried out for features where it is deemed the Salamander Project alone has the potential to make a material contribution to any in-combination effect. In order to determine this, the following criteria have been used (**Sections 2.3.5** and **7.12**):

- The project alone impact is greater than or equal to one individual per year; and/or
- The project alone impact represents an increase in mortality rate of greater than or equal to 0.02 percentage points; and/or
- An Appropriate Assessment for one or more of the other plans considered has concluded there is a potential AEOI to the feature (the site/feature is included in a derogation case).

11.1.1.8 If one or more of the above parameters applies (based on the Applicants approach or the more precautionary SNCB approach), the site/species is carried forward to the in-combination assessment. If none of those criteria are met, then it can be concluded that there is no potential for the Salamander Project, in-combination with other plans or projects, to lead to any AEOI. By following the above approach to in-combination, it is apparent that for some sites and species the project level contribution brought through is <1 individual per annum. Consideration of the implications of that and how such small numbers are addressed in the assessment is provided in **Section 11.2**.

11.1.1.9 The plans and projects to consider in-combination for the ornithology assessment are provided in **Table 2-3**.

11.1.1.10 The potential for an in-combination effect is presented below (**Table 11-1**) (noting that the in-combination assessment applies only to the Operation and Maintenance phase).

Table 11-1 Assessment of features of Special Protection Area or Ramsar sites requiring in-combination assessment

SPA or Ramsar	Features (Impacts)
Buchan Ness to Collieston Coast SPA	Kittiwake (distributional response and collision) Herring gull (collision) Guillemot (distributional response)
East Caithness Cliffs SPA	Kittiwake (distributional response and collision) Razorbill (distributional response)
Farne Islands SPA	Kittiwake (distributional response and collision)

SPA or Ramsar	Features (Impacts)
	Puffin (distributional response)
Forth Islands SPA	Kittiwake (distributional response and collision) Puffin (distributional response) Gannet (distributional response and collision)
Fowlsheugh SPA	Kittiwake (distributional response and collision) Razorbill (distributional response)
Hermaness, Saxa Vord and Valla Field SPA	Gannet (distributional response and collision)
North Caithness Cliffs SPA	Kittiwake (distributional response and collision)
Outer Firth of Forth and St Andrews SPA	Gannet (distributional response and collision)
St. Abb's Head to Fast Castle SPA	Kittiwake (distributional response and collision)
Sule Skerry and Sule Stack SPA	Puffin (distributional response)
Troup, Pennan and Lion's Head SPA	Kittiwake (distributional response and collision) Guillemot (distributional response) Razorbill (distributional response)

11.2 Consideration of *de minimis*

11.2.1 Precaution in the assessment

11.2.1.1 The requirement for, and expectation of, precaution in HRA from a statutory body perspective is well understood. For example, the derogation case submitted by West of Orkney includes East Caithness Cliffs SPA, with a project level contribution of just 0.05 puffin on request from NatureScot that any contribution should be carried forward (West of Orkney Wind Farm, 2023).

11.2.1.2 The precaution inherent in the approach to assessing impact on offshore ornithological receptors from offshore wind was considered in a report by MacArthur Green (2019). This report found that the “building block approach to impact assessment (e.g. independent estimation of the baseline population size, the magnitude of impacts and the subsequent population consequences) means that there can be a tendency to add precaution, or make precautionary assumptions, at each stage of the assessment by focussing attention on the upper limits of each component. The end result is that the final conclusion is based on considerably over-estimated impacts. This is then further compounded when individual project level impacts are added together in cumulative and in-combination assessments”. The scale of that precaution when applying precautionary approaches was considered to be up to 10x for collision risk and up to 14x for distributional response when compared to the use of mean estimates.

11.2.1.3 The level of uncertainty and precaution in such assessments was more recently emphasised by Searle *et al*. (2023), with a focus on reducing that uncertainty, concluding "a failure to recognise or quantify these uncertainties in models and data results in poorly informed decision-making where the rationale is unclear, rather than providing transparent, objective, evidence-based decision-making informed by proportionate risk assessment. It is therefore imperative that we undertake ornithological ORD [Offshore Renewable Development] impact assessments with properly quantified uncertainty to inform the appropriate degree of precaution".

11.2.1.4 That inherent uncertainty is addressed for the Salamander Project through the application of SNCB guidance to data collection and analysis. The deviation from that guidance is limited to the parameters applied in assessment, specifically the Applicant's approach which is presented alongside the SNCB approach (with the justification for those deviations provided in **Section 7.2**).

11.2.1.5 Further, in undertaking the in-combination assessment for offshore ornithology outlined in **Section 11**, a very precautionary approach has been adopted towards which sites and species are carried over from the assessment alone. It is of note that the result is that for some sites/species, the potential contribution to in-combination totals from the Salamander Project is a fraction of a bird for some (if not all) of the assessment scenarios considered. Those sites and species are identified below:

- Buchan Ness to Collieston Coast SPA (herring gull);
- East Caithness Cliffs SPA (razorbill);
- Farne Islands SPA (kittiwake, puffin);
- Forth Islands SPA (kittiwake, puffin);
- Fowlsheugh SPA (razorbill);
- Hermaness, Saxa Vord and Valla Field SPA (gannet);
- North Caithness Cliffs SPA (kittiwake);
- St Abb's Head to Fast Castle SPA (kittiwake);
- Sule Skerry and Sule Stack SPA (puffin); and
- Troup Pennan and Lion's Head SPA (razorbill).

11.2.1.6 For clarity, the conclusions of the assessment made here alone and in-combination are based on the Applicant's approach, with the conclusions based on a *de minimis* approach or with the SNCB parameters provided for information on a without prejudice basis.

11.2.2 Proportionality in the assessment

11.2.2.1 Consideration of a *de minimis* case for impacts of less than a whole bird is deemed proportionate and in line with the European principle of proportionality based on Article 5(4) of the Treaty of the European Union[21]. For example, HM Government (2012) stated, with respect to the Habitats and Wild Birds Directives, that "we are also keen to ensure proportionality in the standard of evidence required, as uncertainties and gaps in

[21] https://www.legislation.gov.uk/eut/teu/article/5

evidence, particularly in the marine environment, lead to slow and/or overly precautionary decisions by regulators". Applying the risk of an adverse effect to the mortality of a fraction of a bird is viewed as overly precautionary, because it is not possible to result in mortality to a fraction of a bird, nor can fractions of birds in reality accumulate over the lifetime of a project, as multiple fractions from different years in reality cannot be equated to a whole bird.

11.2.3 Application of *de minimis* in assessment

11.2.3.1 The term *de minimis* is widely used in a legal sense and is defined by JNCC as "a concept which refers to an overall quantum of change (however it arises) that is of no consequence, irrespective of other considerations" (JNCC, 2021).

11.2.3.2 There have been several reviews of decisions made on the Habitats Regulations that reference *de minimis*, including English Nature (now Natural England) (2006) which found that "whilst it is concluded that very small scale losses can be decisive in important decisions about project proposals, there must be a point at which an effect may be considered *de minimis*" and Natural England (2016) "the scale of an effect is an important consideration in decision making under the Habitats Regulations. This is because it is closely related to the specific legal tests against which a proposed plan or project needs to be assessed especially in stage 1, the 'screening' test and stage 2 the 'appropriate assessment' and 'integrity test'".

11.2.3.3 No analogous view has been sourced for NatureScot, although reference to *de minimis* does appear in guidance on LSE, for example "proposals having no, or *de minimis*, effects can be progressed without further consideration under the Habitats Regulations although reasons for reaching this decision must be justified and recorded" (Scottish Natural Heritage, 2006). The approach to screening applied to the Salamander Project was precautionary (SBES, 2023a), as evident from the multiple sites where very low to no bird mortality has been apportioned (e.g. several sites for kittiwake having <0.01 birds in **Table 7-9** with two sites for guillemot having zero birds apportioned in **Table 7-14**). Given that level of precaution, and the resulting low level of impact if any on assessment, it is not unreasonable to apply the *de minimis* approach to the assessment of potential for adverse effect where relevant as well as at screening for LSE.

11.2.3.4 Natural England (2016) in their review of cases did not find a systematic rule for when an effect could be sufficient to be adverse (or small enough to be *de minimis*). With respect to species, the report found that small scale effects were relevant to "individuals of a designated or classified species population" but does not specify how many individuals, drawing on factors such as rarity, conservation status etc, rather than specific numbers. Reference to fractions of individuals was limited to a single case, with the focus being on the relative importance of the individuals to a population rather than the number of individuals involved. The case of <1 individual related to a proposed wind farm on the Isle of Skye, with a referenced potential mortality of sub-adult golden eagles of 0.27-0.6 alone and 0.9 individuals in-combination. The advice at the time from SNH (now NatureScot) referenced was that the expected increase in sub-adult mortality would not compromise the SPA population. The sub-adults were deemed "floaters" in that they had yet to join the breeding population, with that floating tendency buffering the SPA against change (i.e. the decision was based on ecological reasons and not a *de minimis* case).

11.2.4 *De minimis* in project decision making

11.2.4.1 There is no extant legislation or policy which directly addresses *de minimis*, or which requires consideration of effects that may be considered to be *de minimis*. Indeed, as the Advocate General of the CJEU recognised in Sweetman v An Bord Pleanála (C-258/11), the "requirement that the effect in question be 'significant' exists in order to lay down a *de minimis* threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3) [of the Habitats Directive], activities on or near the site would risk being impossible by reason of legislative overkill".

11.2.4.2 The issue has not been addressed directly by the Competent Authority, either in terms of guidance or (insofar as the Applicant is aware) earlier decision-making. It has, however, been considered in the context of offshore wind developments in England, where it has been applied or disapplied by the Secretary of State on a case-by-case basis.

11.2.4.3 The question of *de minimis* was taken into account in the Appropriate Assessment (AA) produced for the Thanet Extension Offshore Wind Farm (DECC, 2020). The AA concluded that the Thanet Extension project alone contribution on red-throated diver from the Outer Thames Estuary SPA ranged from 0.18-0.93 birds per annum. Specific reference was made to *de-minimis* in the in-combination assessment "effect arising from the Proposed Development, whilst theoretically present, is so minimal as to be within the error margin of relevant assessment and not to be a material consideration" and "the contribution from the Proposed Development whilst apparent is beneath any the threshold of significance and *de minimis*".

11.2.4.4 Lesser black-backed gulls *Larus fuscus* at the Alde-Ore Estuary SPA, subject to a derogation case for Norfolk Vanguard under consent granted in February 2022, has been considered by additional projects subsequently including in the AA for the East Anglia One North project published the following month. In that, DECC (2022) concluded that for the East Anglia One North project alone "an additional mortality of 0.3 birds due to collisions would only increase the mortality rate by 0.06%... considered unlikely to result in a significant effect and therefore an adverse effect on the integrity of the site for the Project alone was excluded" (in agreement with Natural England). In-combination, the Secretary of State noted that "the conservation objectives for the SPA require restoration of the lesser black-back gull population to the level for which it was designated and any adverse impacts on the population are likely to prevent or delay the achievement of the objectives…. adverse effect …from the Project in-combination with other projects cannot be excluded".

11.2.4.5 For Dudgeon and Sheringham Extension Projects (decision pending April 2024), agreement was recorded with Natural England that no adverse effect will result alone and in-combination in the final statement of common ground[22]. The collision risk (no requirement for a distributional response for kittiwake) in the RIAA (Equinor, 2022) for the combined two projects was identified as 0.001-0.007 individuals (increasing baseline mortality by 0.0003%), with a note that an increase in the baseline mortality rate of <1% is unlikely to be detectable above natural variation and therefore would not contribute to any AEOI. A similar approach was applied by the applicant for Hornsea Four, specifically that, in order for there to be an in-combination effect to be assessed, the effect arising from the project alone had to be of sufficient magnitude to make a material contribution to an in-combination assessment. Therefore, where an effect from the project alone was determined to be trivial and inconsequential that would be well within the error margins of the assessment, there was no potential for any contribution for an in-combination effect to occur on such features and designated sites (Hornsea Project Four Ltd, 2022).

11.2.4.6 In respect of a number of the impact-effect pathways, they concluded that the effects from the project alone were trivial or within what could be expected as a result of natural variation in baseline mortality, and that

[22] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010109/EN010109-002181-14.8%20Final%20Statement%20of%20Common%20Ground%20with%20Natural%20England%20(Offshore%20Ornithology)%20(Revision%20B).pdf

they could make no perceptible, consequential contribution to effects in combination. The ExA considered that this approach has been accepted practice where the effects could be shown to be imperceptible.

11.2.4.7 The Rampion 2 offshore wind farm is currently undergoing Examination (at the time of writing, February 2024). Relevant to a *de minimis* case is the potential project level impact to lesser black-backed gull at the Alde-Ore Estuary SPA (0.018 individuals per annum) and kittiwake at the Flamborough and Filey Coast SPA (0.72 individuals per annum). Both SPAs are subject to a derogation case (including those noted above for the Alde-Ore SPA, and Hornsea Four for Flamborough and Filey Coast SPA). For Rampion 2, Natural England identified in their principal areas of disagreement[23] that the additional impact on the Flamborough Head SPA for kittiwake would "risk furthering adverse effects" whereas in their Relevant Representation[24] considered the impact to lesser black-backed gulls to be not adverse in-combination.

11.2.4.8 In summary, it is apparent that a conclusion of no AEOI has been drawn alone and in-combination with respect to a number of projects where the project contribution was <1 but >0, including where the site and species in question were subject to a derogation case. The project level of impact varied from 0.007-0.93 individuals per annum.

11.2.5 *De minimis* applied to the Salamander Project

11.2.5.1 Following the review of the application of *de minimis* in HRA, including with respect to offshore wind and offshore ornithology, the approach applied here is that where a project level impact is found to be <1 individual per year, a *de minimis* case applies and therefore no measurable contribution can be made to any in-combination effect. However, on a without prejudice basis and to ensure that the information is available if required by the Competent Authority, the approach to in-combination defined in **Sections 2.3.5** and **7.12** has been applied, meaning that as noted above, some sites and features have been carried through to the in-combination assessment where a *de minimis* contribution can be concluded.

11.2.5.2 Further, it is recognised (following the flow diagram presented in **Figure 1-2**) that where it cannot be ascertained that the proposal will not adversely affect the integrity of a site, additional stages in the HRA process are required prior to consent being determined. Those stages (Stage 6 onwards of **Figure 1-2**) are referred to as the derogations. Should the assessment conclusions raise the potential requirement to progress through the derogations (i.e. the assessment cannot draw a conclusion of no AEOI), the Salamander Project has adopted a tiered approach to sites and species, as follows:

- **Full Derogation Case**: where the Salamander Project concludes >1 individual birds per annum for the Salamander Project alone based on the Applicant's approach and the assessment cannot rule out AEOI in-combination, the site and species progresses to a full Derogation Case (**Volume RP.A.3, Report 1: Derogation Case, Part 1-3**); and
- **Without Prejudice Derogation Case**: two potential triggers are applied for inclusion within the without prejudice Derogation Case. These are: where the Salamander Project concludes >0 individual birds per annum under any assessment scenario and AEOI cannot be ruled out in at least one assessment scenario, whether the Applicants and/or the SNCB approach with or without Berwick Bank (and is not covered under the full Derogation Case above); and where the Salamander Project concludes >0 individual birds per annum, and the site/species is already subject to a derogation case in the public domain, regardless of the conclusions of the

[23] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000479-Natural%20England%20Principal%20Areas%20of%20Disagreement.pdf
[24] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000480-Natural%20England%20Relevant%20Reps%20COMBINED.pdf

Salamander Project assessment (and is not covered under the full Derogation Case) (**Volume RP.A.3, Report 1: Derogation Case**).

11.2.5.3 The above approach therefore clearly distinguishes between sites and features where a *de minimis* case applies to the conclusion of the assessment to ensure that although the Applicant's approach is presented, additional information is also provided if required.

11.3 In-combination data sources

11.3.1.1 The in-combination assessment for ornithology requires the mortality from each other relevant project apportioned to the SPA or Ramsar site being assessed. Primarily, this has been drawn from the recent Berwick Bank HRA (SSE Renewables, 2022) as the most comprehensive recent compilation. It should be noted that Berwick Bank do not provide in-combination values for individual projects but totalled for the UK North Sea region with all the projects included in the total listed in **Table 2-3**.

11.3.1.2 Where values were not available from Berwick Bank, other data sources were used as necessary and are referenced accordingly.

11.3.1.3 In addition, project-alone values for more recent projects have been added to the Berwick Bank totals, specifically Green Volt (Green Volt, 2023), West of Orkney (Offshore Wind Power Limited, 2023) and Pentland Floating Wind (Xodus Group Ltd, 2022). As quantitative information for these projects was not available at the time Berwick Bank was compiling its assessment, values for these projects are not included in the UK North Sea totals presented by Berwick Bank.

11.3.1.4 The number of mortalities for other projects is dependent on the approach used for assessment. There is scope for this to vary, for example using different distributional response /mortality rates to assess distributional responses, or different avoidance rates to assess collision mortality. Typically, more than one approach is presented to give a range of plausible impact mortalities. In particular, Berwick Bank followed a "dual approach" to assessment, presenting both a "Scoping Approach" (following advice from SNCBs, as presented in the NatureScot guidance notes) and "Developer Approach" (the preferred approach of that project's developer). Where the Scoping Approach is to assess a range of impacts, the lower and upper end of that range are distinguished as "Scoping A" and "Scoping B" respectively. For more details on the approaches to assessment used in previous assessments, refer to the source document referenced.

11.3.1.5 This in-combination assessment presents the full range of impact mortalities, as presented in the source material, and from that range considers the lowest value and the highest value presented for each other project (identified here as the approach applied by each project), in order to create a "low" approach total (which is variously either the projects referred approach or the lower end of the SNCB approach) and a "high" approach total (typically the more precautionary end of the SNCB approach).

11.3.1.6 Where quantitative assessment is not available in the source data for a project for a feature/site, this is shown as "n/a" in the tables in each assessment. If no quantitative information is available, this is indicative that the source assessment concluded that the project had either no connectivity or a negligible impact on the feature/site.

11.3.1.7 In line with NatureScot's comments on the Screening Report (**Figure 1-2**), the assessment has been carried out both including impacts from Berwick Bank and excluding those impacts. Where the in-combination totals are sources from the Berwick Bank RIAA (SSE Renewables, 2022), Berwick Bank's own impact is included in the UK North Sea regional totals (with the contribution from each project drawing on public domain information). Therefore, the scenario excluding impacts from Berwick Bank is calculated by simply subtracting the Berwick Bank Alone impacts from the UK North Sea regional total (with results presented as low and high, based in the Berwick Developer and Scoping B approaches).

11.4 Ornithology In-combination Assessment for the Buchan Ness to Collieston Coast Special Protection Area

11.4.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Buchan Ness to Collieston Coast SPA are:

- Kittiwake (distributional response and collision);
- Herring gull (collision); and
- Guillemot (distributional response).

11.4.2 Kittiwake (distributional response)

11.4.2.1 The distributional response mortality from other relevant projects is given in **Table 11-2**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-2 Kittiwake distributional response annual mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	5	0.7	3.2	8.9
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	5	2	9.7	16.7
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	1.3	n/a	1.3
Green Volt	Green Volt (2023)	Low	0	0.1	0	0.1
Green Volt	Green Volt (2023)	High	0	0.3	0	0.3
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	n/a

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published (PFOWF, 2023)[25] and that includes a 43% reduction in kittiwake numbers for the project (but not apportioned to sites and therefore cannot be applied in-combination)	0	0	0	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (30% disp 1% mort) (low)	1	0.7	0.6	2.3
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (30% disp 3% mort) (high)	3	2	1.8	6.8
Berwick Bank alone	SSE Renewables (2022a)	Developer (30% disp 2% mort)	n/a	1.3	n/a	1.3

11.4.2.2 The total in-combination mortalities is presented in **Table 11-3**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required).The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3**) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-3 Kittiwake distributional response mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area in-combination totals.

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	5.0	5.0	0.7	2.0	3.2	9.7	8.9	16.7

[25] https://marine.gov.scot/sites/default/files/231011_-_pentland_floating_offshore_wind_farm_-_variations_-_s.36_and_offshore_wind farm_and_transmission_infrastructre_-_s36_variation_application_report_-_develope_002_redacted.pdf

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Green Volt	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.3
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	1.0	3.0	0.7	2.0	0.6	1.8	2.3	6.8
Salamander	0.0	0.0	3.9	11.6	n/a	n/a	3.9	11.6
Total (including Berwick Bank)	**5.0**	**5.0**	**4.7**	**13.9**	**3.2**	**9.7**	**12.9**	**28.6**
Total (excluding Berwick Bank)	**4.0**	**2.0**	**4.0**	**11.9**	**2.6**	**7.9**	**10.6**	**21.8**

11.4.2.3 With a citation population of 60,904 breeding adults, 10.6 to 28.6 additional mortalities represents a 0.017 to 0.047 percentage point increase in mortality rates. Therefore, PVA has been carried out both with and without Berwick Bank and for the high and low scenarios, to further assess the total in-combination impact.

11.4.2.4 The PVA results are summarised in **Table 11-4**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-4 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the Buchan Ness to Collieston Coast Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	12.9	60,904	22,590	21,393	20,948	0.9993	0.9761
	High	28.6	60,904	22,590	21,393	20,315	0.9985	0.9474
Excluding Berwick Bank	Low	10.6	60,904	22,590	21,393	20,983	0.9994	0.9800
	High	21.8	60,904	22,590	21,393	20,604	0.9989	0.9595

11.4.2.5 The kittiwake population of the Buchan Ness to Collieston Coast SPA has declined significantly between its citation level of 60,904 breeding adults and recent counts of 22,590 breeding adults (Burnell *et al*., 2023), and is assessed as being in "Unfavourable No Change" condition (NatureScot, ND).

11.4.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median Counterfactual of Growth Rate (CGR) is, for all scenarios, greater than 0.998 which indicates the population growth rate declines by less than 0.2%. After 35 years (the expected lifespan of the Salamander Project), the Counterfactual of Population Size (CPS) ranges from 0.9474 (with Berwick Bank; High approach to assessment) to 0.9800 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small regardless of the impact scenario considered (but especially without Berwick Bank), and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.4.3 Kittiwake (collision)

11.4.3.1 The collision mortality from other relevant projects is given in **Table 11-5**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-5 Kittiwake collision mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	25.2	27.0	19.1	71.3
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	24.4	25.0	17.7	67.1
Green Volt	Green Volt (2023)		0.1	1.2	0.1	1.4
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	1.0	0.2	0.8	1.9
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	1.1	0.2	0.8	2.1
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	1.2	0.3	0.9	2.3
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a 43% reduction in kittiwake numbers for the project (but not apportioned	0.0	0.0	0.0	0.0

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
		to sites and therefore cannot be applied in-combination).				
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	4.6	6.5	3.2	14.3
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	3.7	4.5	1.9	10.1

11.4.3.2 The total in-combination mortalities is presented in **Table 11-6**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-6 Kittiwake collision mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	24.4	25.2	25.0	27.0	17.7	19.1	67.1	71.3
Green Volt	0.1	0.1	1.2	1.2	0.1	0.1	1.4	1.4
West of Orkney	1.0	1.2	0.2	0.3	0.8	0.9	1.9	2.3
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	3.7	4.6	4.5	6.5	1.9	3.2	10.1	14.3
Salamander (SNCB approach)	0.0	0.0	8.0	8.0	0.0	0.0	8.0	8.0
Salamander (Applicant's approach)	0.0	0.0	5.1	5.1	0.0	0.0	5.1	5.1
Total (including Berwick Bank) (SNCB approach)	**25.5**	**26.5**	**34.4**	**36.5**	**18.6**	**20.1**	**78.5**	**83.1**

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Total (excluding Berwick Bank) (SNCB approach)	**21.8**	**21.9**	**29.9**	**30.0**	**16.7**	**16.9**	**68.4**	**68.8**
Total (including Berwick Bank) (Applicant's approach)	**25.5**	**26.5**	**31.5**	**33.6**	**18.6**	**20.1**	**75.6**	**80.2**
Total (excluding Berwick Bank) (Applicant's approach)	**21.8**	**21.9**	**27.0**	**27.1**	**16.7**	**16.9**	**65.5**	**65.9**

11.4.3.3 With a citation population of 60,904 breeding adults, 68.4 to 83.1 additional annual mortalities represents a 0.112 to 0.136 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 65.5 to 80.2 (Applicant's approach), there is a percentage point increase in mortality of 0.108 to 0.132. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.4.3.4 The PVA results are summarised in **Table 11-7**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-7 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the Buchan Ness to Collieston Coast Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB Approach								
Including Berwick Bank	Low	78.5	60,904	22,590	21,449	18,513	0.9959	0.8619
	High	83.1	60,904	22,590	21,449	18,284	0.9956	0.8547
Excluding Berwick Bank	Low	68.4	60,904	22,590	21,449	18,875	0.9964	0.8792
	High	68.8	60,904	22,590	21,449	18,791	0.9964	0.8774
Applicant's Approach								

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	75.6	60,904	22,590	21,449	18,599	0.9960	0.8668
	High	80.2	60,904	22,590	21,449	18,439	0.9958	0.8598
Excluding Berwick Bank	Low	65.5	60,904	22,590	21,449	18,897	0.9966	0.8833
	High	65.9	60,904	22,590	21,449	18,888	0.9965	0.8827

11.4.3.5 The kittiwake population of the Buchan Ness to Collieston Coast SPA has declined significantly between its citation level of 60,904 breeding adults and recent counts of 22,590 breeding adults (Burnell *et al.*, 2023), and is assessed as being in “Unfavourable No Change” condition (NatureScot, ND). The intent and expectation of the sandeel fishing ban, if implemented, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.4.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.995 which indicates the population growth rate declines by less than 0.5%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8547 (with Berwick Bank; High approach to assessment) to 0.8792 (without Berwick Bank; Low approach to assessment). Following the recent study by Ozsanlav-Harris *et al.* (2023), the applicant approach is considered appropriate due to incorporating the updated kittiwake avoidance rate compared to the SNCB approach. If the applicant approach were to be used, the median CGR is 0.9966, which indicates the population growth rate declines by less than 0.5% after 35 years.

11.4.3.7 Whilst this level of impact is small, it is not negligible and in the context of a population that is already declining, the additional mortality from the Salamander Project in combination with other projects and plans would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. This is discussed further in **Section 11.4.4**.

11.4.4 Kittiwake (distributional response and collision)

11.4.4.1 The combined additional mortality from distributional response and collision (using a simple additive approach of the values in **Table 11-3** and **Table 11-6**) is presented in **Table 11-8**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach, with the consequence of higher numbers of birds than would be evident if macro-avoidance was taken into account. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-8 Kittiwake combined distributional response and collision mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	29.4	30.2	25.7	29.0	20.9	28.8	76.0	88.0
Green Volt	0.1	0.1	1.3	1.5	0.1	0.1	1.5	1.7
West of Orkney	1.0	1.2	0.2	0.3	0.8	0.9	1.9	2.3
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	4.7	7.6	5.2	8.5	2.5	5.0	12.4	21.1
Salamander (SNCB approach)	0.0	0.1	11.8	19.6	0.0	0.0	11.9	19.7
Salamander (Applicant's approach)	0.0	0.0	9.0	9.0	0.0	0.0	9.0	9.0
Total (including Berwick Bank) (SNCB approach)	**30.5**	**31.5**	**39.1**	**50.4**	**21.8**	**29.8**	**91.4**	**111.7**
Total (excluding Berwick Bank) (SNCB approach)	**25.8**	**23.9**	**33.9**	**41.9**	**19.3**	**24.8**	**79.0**	**90.6**
Total (including Berwick Bank) (Applicant's approach)	**30.5**	**31.5**	**36.2**	**47.5**	**21.8**	**29.8**	**88.5**	**108.8**
Total (excluding Berwick Bank) (Applicant's approach)	**25.8**	**23.9**	**31.0**	**39.0**	**19.3**	**24.8**	**76.1**	**87.7**

11.4.4.2 With a citation population of 60,904 breeding adults, 79.0 to 111.7 additional annual mortalities represents a 0.130 to 0.183 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 76.1 to 108.8 (Applicant's approach), there is a percentage point increase in mortality of 0.125 to 0.179. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.4.4.3 The PVA results are summarised in **Table 11-9.** Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-9 Summary of Population Viability Analysis results for combined annual distributional response and collision impacts on kittiwake at the Buchan Ness to Collieston Coast Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB Approach								
Including Berwick Bank	Low	91.4	60,904	22,590	21,449	18,021	0.9952	0.8411
	High	111.7	60,904	22,590	21,449	17,346	0.9941	0.8095
Excluding Berwick Bank	Low	79.0	60,904	22,590	21,449	18,497	0.9959	0.8615
	High	90.6	60,904	22,590	21,449	18,086	0.9953	0.8428
Applicant's Approach								
Including Berwick Bank	Low	88.5	60,904	22,590	21,449	18,128	0.9954	0.8456
	High	108.8	60,904	22,590	21,449	17,442	0.9943	0.8139
Excluding Berwick Bank	Low	76.1	60,904	22,590	21,449	18,553	0.9960	0.8664
	High	87.7	60,904	22,590	21,449	18,139	0.9954	0.8467

11.4.4.4 The kittiwake population of the Buchan Ness to Collieston Coast SPA has declined significantly between its citation level of 60,904 breeding adults and recent counts of 22,590 breeding adults (Burnell *et al.*, 2023), and is assessed as being in "Unfavourable No Change" condition (NatureScot, ND). The intent and expectation of the sandeel fishing ban, if implemented, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations(Scottish Government, 2023b).

11.4.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.994 which indicates the population growth rate declines by less than 0.6%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8095 (with Berwick Bank; High approach to assessment) to 0.8615 (without Berwick Bank; Low approach to assessment).

11.4.4.6 Following the recent study by Ozsanlav-Harris et al. (2023), the Applicant's approach is considered appropriate due to incorporating the updated kittiwake avoidance rate compared to the SNCB approach. If the applicant approach were to be used, the median CGR is 0.9943 to 0.9960, which indicates the population growth rate declines by less than 0.6%. The CPS ranges from 0.8139 (with Berwick Bank; High approach to assessment) to 0.8664 (without Berwick Bank; Low approach to assessment).

11.4.4.7 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 96.3 to 98.7 birds per annum. This would result in additional mortality of 0.410 – 0.437%. For a moderate prey year, which is a typical SeabORD metric to report, it was estimated that 98.7 bird per annum would face mortality. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. The tools authors also state that there are modifications needed (Searle et al. 2022), which indicates that the tool cannot be solely relied upon due to its current state and hence should be used for contextual purposes only. Nonetheless, the SeabORD results are in line with the estimates produced by the Applicant's approach (Berwick Bank was included in SeabORD runs), which provides confidence in these results.

11.4.4.8 Kittiwake at Buchan Ness to Collieston Coast SPA are included in a without prejudice derogation case for Green Volt (Green Volt, 2023) (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (0.1-0.3 kittiwake excluding Berwick Bank, 12.5-21.4 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site.

11.4.4.9 Overall, whilst this level of impact is small, it is not negligible and in the context of a population that is already declining, the additional mortality from the Salamander Project in combination with other projects and plans would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives for all assessment scenarios and both with and without Berwick Bank.

11.4.5 Herring gull (collision)

11.4.5.1 The collision mortality from other relevant projects is given in **Table 11-10**. Note that Berwick Bank do not carry out a quantitative assessment of the impact to the herring gull feature of the Buchan Ness to Collieston Coast SPA and therefore the relevant project assessments (as referenced in **Section 14** with web links) have been reviewed to source the relevant numbers and there is no separate with/without Berwick Bank assessment.

Table 11-10 Herring gull collision mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area from other relevant projects

Project(s)	Data source	Adult mortalities (individuals)		
		Breeding	Non-breeding	Annual
Moray West	Moray West Consent Variation (2021)	0	0	0
Moray East	Moray East (212)	0	0	0
Beatrice	RPS (2012).	0	0	0
Hywind	Statoil (2015)	n/a	n/a	0.5

Project(s)	Data source	Adult mortalities (individuals)		
		Breeding	Non-breeding	Annual
Kincardine	Kincardine Offshore Wind Farm Limited (2016)	0	0	0.0
Aberdeen European Offshore Wind Deployment Centre	Aberdeen Bay Offshore Wind Farm (Marine Scotland, 2013)	n/a	0	2
Neart na Gaoithe	Neart na Gaoithe Revised Design (Marine Scotland, 2018)	n/a	0	0.07
Seagreen Alpha and Bravo	Combined Appropriate Assessment (Marine Scotland, 2019) (impact referenced as 'virtualy none').	n/a	0	0.0
Inch Cape	Ornithology HRA (2018)	n/a	n/a	n/a
Green Volt	Green Volt (2023)	0	0	0
Berwick Bank	SSE Renewables (2022a)	n/a	n/a	0.0
West of Orkney	Offshore Wind Power Limited (2023)	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	n/a	n/a	0.0

11.4.5.2 The total in-combination mortalities is presented in **Table 11-11**. As noted in **Section 7.2.8**, the use of grouped avoidance rates for large gulls when applied to herring gull (as applied here, understood to be the preferred option until species specific avoidance rates are agreed) results in slightly higher numbers. The species specific avoidance rate for herring gull in Ozsanlav-Harris *et al*. (2023) would result in numbers very similar to those under the SNCB approach. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-11 Herring gull collision mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)		
	Breeding	Non-breeding	Annual
All other projects	0.0	0.0	2.57
Salamander (SNCB approach)	0.0	0.9	0.9
Salamander (Applicant's approach)	0.0	1.1	1.1

Project(s)	Adult mortalities (individuals)		
	Breeding	Non-breeding	Annual
Total (SNCB approach)	**0.0**	**0.9**	**3.47**
Total (Applicant's approach)	**0.0**	**1.1**	**3.67**

11.4.5.3 With a citation population of 8,584 breeding adults, 3.47 additional annual mortalities represents a 0.040 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 3.67 (Applicant's approach, noting the caveat on these above), there is a percentage point increase in mortality of 0.043. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.4.5.4 The PVA results are summarised in **Table 11-12**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-12 Summary of Population Viability Analysis results for annual collision impacts on herring gull at the Buchan Ness to Collieston Coast Special Protection Area

Scenario	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach	3.47	8,584	4,154	1,134	1,101	0.9990	0.9653
Applicant's approach	3.67	8,584	4,154	1,134	1,096	0.9989	0.9625

11.4.5.5 The herring gull feature of the Buchan Ness to Collieston Coast SPA is assessed as "Unfavourable No change" condition (NatureScot, ND). However, the recent count data (Burnell *et al.*, 2023) indicates that the population has declined from its citation level. It is noted that the recent count data has enabled a comprehensive population estimate for herring gull. However, 'there is low confidence in the population trends since the last census due to changes in methodology and/or improved survey coverage which means there is insufficient comparability between Seabird 2000 and Seabirds Count population estimates'[26]. A full technical report on urban gulls (including herring gull), where substantial numbers of birds have been documented, is pending and these birds do not currently directly contribute to the National Site Network. The decline in herring gull numbers is nationwide and is thought to be linked to factors such as botulism from refuse, a change in refuse management (resulting in declining food) and a reduction in fishery discards (loss resulting in declining food)[27]. The cause of such a decline in herring gull numbers is therefore arguably

[26] https://jncc.gov.uk/our-work/seabirds-count/#results
[27] https://jncc.gov.uk/our-work/herring-gull-larus-argentatus/

linked to improving environmental practice, with the previous herring gull populations (including the citation population) having been artificially elevated (notwithstanding the increase in urban gulls).

11.4.5.6 The PVA modelling concluded that the median reduction in growth rate of the impacted scenario compared to the counterfactual would be 0.11% whilst after the lifespan of the Salamander Project (35 years), the total population size would be 3.8% smaller than the counterfactual population. Following the published study by Ozsanlav-Harris *et al.* (2023), the avoidance rate recommended by the SNCB (2014) (0.995), which is in line with the species-specific avoidance rates calculated by Ozsanlav-Harris *et al.* (2023) (0.9952), is considered more appropriate for herring gull than the large gull avoidance rate applied here in the Applicant's approach (the grouped approach has been applied in each case for the Applicant's approach). The large gull grouped avoidance rates used within the Applicant's approach introduce more precaution, with the rate being lower (0.9939) than all large gull species-specific avoidance rates. The difference is explained in Cook *et al*. (2021) as being due to the identification of birds to group level rather than species level in surveys for two reports used in the analysis. As species-specific avoidance rates are calculated from robust analysis, the species-specific rate represents the best available evidence. Therefore, of the two approaches presented, the species specific approach is supported by more robust evidence than the generic application of the grouped avoidance rates (with use of the grouped rates for Ozsanlav-Harris *et al.* (2023) understood to be the SNCB preferred approach).

11.4.5.7 When considering the above, for the SNCB approach, PVA modelling concluded that the median reduction in growth rate of the impacted scenario compared to the counterfactual would be 0.1% whilst after the lifespan of the Salamander Project (35 years), the total population size would be 3.4% smaller than the counterfactual population. The level of impact is considered small, and is not of a magnitude that can be said to adversely affect the likelihood of the herring gull populations being maintained as a viable component of the site. In any case, the Salamander Project contribution under the species specific SNCB approach is just 0.9 individuals per annum, and following the approach set out in **Section 11.2** is considered *de minimis* and would not make a measurable contribution to any in-combination effect. In addition, it should be noted that in the EIAR (**Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology**) with respect to herring gull, peak herring gull densities were recorded on two instances (November 2022 and January 2023) an order of magnitude greater than during other months. These density peaks were associated with a tight cluster of records in one area of the survey, with similar clustering observed in other species (great black-backed gull, gannet, and fulmar) and have been attributed to the presence of fishing vessels.

11.4.6 Guillemot (distributional response)

11.4.6.1 The distributional response mortality from other relevant projects is given in **Table 11-13.** Where n/a is noted no figure was provided**.** Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-13 Guillemot distributional response mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
UK North Sea projects	SSE Renewables (2022a)	Scoping A	13.3	6.2	19.5
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	22.2	18.5	40.7
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	3.7	5.1	8.8
Green Volt	Green Volt (2023)	SNCB Low	14.7	1.2	15.9
Green Volt	Green Volt (2023)	SNCB High (high)	24.5	3.7	28.2
Green Volt	Green Volt (2023)	Developer (low)	4.1	1	5.1
West of Orkney	Offshore Wind Power Limited (2023)	Low	n/a	n/a	0
West of Orkney	Offshore Wind Power Limited (2023)	Mid	n/a	n/a	0
West of Orkney	Offshore Wind Power Limited (2023)	High	n/a	n/a	0
Pentland	Xodus Group Ltd (2022)	No guillemot numbers included in the Pentland update.	n/a	n/a	0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	5.5	4.1	9.6
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	9.1	12.4	21.5
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	1.5	3.4	4.9

11.4.6.2 The total in-combination mortalities is presented in **Table 11-14**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-14 Guillemot distributional response mortalities apportioned to the Buchan Ness to Collieston Coast Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	3.7	22.2	5.1	18.5	8.8	40.7
Green Volt	4.1	24.5	1.0	3.7	5.1	28.2
West of Orkney	n/a	n/a	n/a	n/a	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	1.5	9.1	3.4	12.4	4.9	21.5
Salamander	13.7	82.1	12.9	46.6	26.6	128.6
Total (including Berwick Bank)	**21.5**	**128.8**	**19.0**	**68.8**	**40.5**	**197.5**
Total (excluding Berwick Bank)	**20.0**	**119.7**	**15.6**	**56.4**	**35.6**	**176.0**

11.4.6.3 With a citation population of 17,280 breeding adults, 35.6 to 197.5 additional annual mortalities represents a 0.206 to 1.143 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.4.6.4 The PVA results are summarised in Table 11-15. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-15 Summary of Population Viability Analysis results for annual distributional response on guillemot at the Buchan Ness to Collieston Coast Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	40.5	17,280	39,440	97,430	93,699	0.999	0.960
	High	197.5	17,280	39,440	97,430	79,769	0.994	0.817
	Low	35.6	17,280	39,440	97,430	94,013	0.999	0.964

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Excluding Berwick Bank	High	176.0	17,280	39,440	97,430	81,523	0.995	0.836

11.4.6.5 The guillemot population at the Buchan Ness to Collieston Coast SPA has grown from its citation level of 17,280 to 39,440 based on recent count data (Burnell *et al.*, 2023) and is assessed as being in a "Favourable Maintained" condition. The PVA results show that the guillemot population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.994 which indicates the population growth rate declines by less than 0.6% compared to the counterfactual. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.817 (with Berwick Bank; High approach to assessment) to 0.964 (without Berwick Bank; Low approach to assessment).

11.4.6.6 This level of impact is small, and in the context of substantial growth between the SPA citation population and recent counts (Burnell *et al.*, 2023), and with the population expected to continue to grow (especially as a result of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024), the PVA results indicate that there is no prospect for the impact to adversely affect the site from achieving its conservation objectives.

11.4.6.7 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 174.0 to 270.3 birds per annum. This would result in additional mortality of 0.442 – 0.687%. For a moderate prey year, which is a typical SeabORD metric to report, it was estimated that 197.7 birds per annum would face mortality. The upper end of this mortality is higher than the upper end of the range considered when applying the matrix approach. SeabORD is seen as being more biologically representative by the SNCBs. SeabORD however relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. With regards to bigger populations such as those seen by guillemot, the model cannot be run using 100% of colony populations and relies on only a subset of the population being simulated in the model (for example 20%). Outputs then are scaled to generate an estimate for 100% of the population. The model authors however state that results may not scale linearly, and therefore they may not produce the exact same values as running the full population in the simulation. This could lead to under or overestimations of mortalities and mortality rates.

11.4.6.8 In the SeabORD model there are a vast range of parameters and assumptions, many of which are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. It is likely therefore that for guillemot, the matrix table approach provides the best mortality estimate for use in the assessment.

11.4.7 Conclusion for the Buchan Ness to Collieston Coast Special Protection Area in-combination

11.4.7.1 It can be concluded that there is, therefore, potential for an AEOI for kittiwake (but not herring gull and guillemot) in view of the conservation objectives of the Buchan Ness to Collieston Coast SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.5 Ornithology In-combination Assessment for the East Caithness Cliffs Special Protection Area

11.5.1.1 As presented in **Table 11-1**, the features that require in-combination assessment at the East Caithness Cliffs SPA are:

- Kittiwake (distributional response and collision).

11.5.2 Kittiwake (distributional response)

11.5.2.1 The distributional response mortality from other relevant projects is given in **Table 11-16**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-16 Kittiwake distributional response mortalities apportioned to the East Caithness Cliffs SPA from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	16	32.6	10.5	59.1
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	48	97.7	31.4	177.1
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	65.1	n/a	65.1
Green Volt	Green Volt (2023)	Low	0	0.1	0	0.1
Green Volt	Green Volt (2023)	High	0.1	0.2	0.1	0.4
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a 43% reduction in	0	0.16	0	0.2

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
		kittiwake numbers for the project (but not apportioned to sites and therefore cannot be applied in-combination).				
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	3.1	0	2	5.1
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	9.5	0.1	5.9	15.5
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	0.1	n/a	0.1

11.5.2.2 The total in-combination mortalities is presented in **Table 11-17**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required).The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3**) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-17 Kittiwake distributional response mortalities apportioned to the East Caithness Cliffs SPA in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	16.0	48.0	32.6	97.7	10.5	31.4	59.1	177.1
Green Volt	0.0	0.1	0.1	0.2	0.0	0.1	0.1	0.4
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Pentland	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Berwick Bank alone	3.1	9.5	0.0	0.1	2.0	5.9	5.1	15.5
Salamander	0.1	0.2	0.6	1.7	n/a	n/a	0.6	1.8
Total (including Berwick Bank)	**16.1**	**48.3**	**33.4**	**99.7**	**10.5**	**31.5**	**60.0**	**179.5**
Total (excluding Berwick Bank)	**13.0**	**38.8**	**33.4**	**99.6**	**8.5**	**25.6**	**54.9**	**164.0**

11.5.2.3 With a citation population of 65,000 breeding adults, 54.9 to 179.5 additional annual mortalities represents a 0.084 to 0.276 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.5.2.4 The PVA results are summarised in **Table 11-18.** Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-18 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the East Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	60.0	65,000	48,958	46,533	44,119	0.9986	0.9493
	High	179.5	65,000	48,958	46,533	39,587	0.9957	0.8549
Excluding Berwick Bank	Low	54.9	65,000	48,958	46,533	44,359	0.9987	0.9533
	High	164.0	65,000	48,958	46,533	40,312	0.9960	0.8670

11.5.2.5 The kittiwake feature of the East Caithness Cliffs SPA is assessed as being in "Favourable Maintained" condition (NatureScot, ND). The recent count data (Burnell *et al.*, 2023) indicates the current population is smaller than the citation population. The PVA results show that the kittiwake population will have a small decline in the absence of additional impacts, with a slight increase in that decline under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populationsError! Bookmark not defined..

11.5.2.6 The median CGR is, for all scenarios, greater than 0.995 which indicates the population growth rate declines by less than 0.5% compared to the counterfactual. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8549 (with Berwick Bank; High approach to assessment) to 0.9533 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.5.3 Kittiwake (collision)

11.5.3.1 The collision mortality from other relevant projects is given in **Table 11-19**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-19 Kittiwake collision mortalities apportioned to the East Caithness Cliffs Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	81.2	91.5	61.4	234.1
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	78.5	91.3	57.1	226.9
Green Volt	Green Volt (2023)		0.3	0.8	0.4	1.5
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined) (low)	3.1	2.9	2.5	8.5
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	3.4	3.4	2.7	9.5
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined) (high)	3.7	3.8	2.9	10.5
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a 43% reduction in	0	0.6	0	0.6

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
		kittiwake numbers for the project (but not apportioned to sites and therefore cannot be applied in-combination).				
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	14.6	0.5	10.4	25.5
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	11.9	0.4	6.1	18.4

11.5.3.2 The total in-combination mortalities is presented in **Table 11-20**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-20 Kittiwake collision mortalities apportioned to the East Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	78.5	81.2	91.3	91.5	57.1	61.4	226.9	234.1
Green Volt	0.3	0.3	0.8	0.8	0.4	0.4	1.5	1.5
West of Orkney	3.1	3.7	2.9	3.8	2.5	2.9	8.5	10.5
Pentland	0.0	0.0	0.6	0.6	0.0	0.0	0.6	0.6
Berwick Bank alone	11.9	14.6	0.4	0.5	6.1	10.4	18.4	25.5
Salamander (SNCB approach)	0.0	0.0	1.1	1.1	0.1	0.1	1.3	1.3

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Salamander (Applicant's approach)	0.0	0.0	0.7	0.7	0.1	0.1	0.8	0.8
Total (including Berwick Bank) (SNCB approach)	**82.0**	**85.2**	**96.7**	**97.8**	**60.1**	**64.8**	**238.7**	**247.9**
Total (excluding Berwick Bank) (SNCB approach)	**70.1**	**70.6**	**96.3**	**97.3**	**54.0**	**54.4**	**220.3**	**222.4**
Total (including Berwick Bank) (Applicant's approach)	**82.0**	**85.2**	**96.3**	**97.4**	**60.0**	**64.8**	**238.3**	**247.5**
Total (excluding Berwick Bank) (Applicant's approach)	**70.1**	**70.6**	**95.9**	**96.9**	**53.9**	**54.4**	**219.9**	**222.0**

11.5.3.3 With a citation population of 65,000 breeding adults, 220.3 to 247.9 additional annual mortalities represents a 0.339 to 0.381 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 219.9 to 247.5 (Applicant's approach), there is a percentage point increase in mortality of 0.338 to 0.381. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.5.3.4 The PVA results are summarised in **Table 11-21**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-21 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the East Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
	Low	238.7	65,000	48,958	46,410	37,725	0.9942	0.8122

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	High	24.9	65,000	48,958	46,410	37,400	0.9940	0.8058
Excluding Berwick Bank	Low	220.3	65,000	48,958	46,410	38,250	0.9947	0.8253
	High	222.4	65,000	48,958	46,410	38,245	0.9946	0.8238
Applicant's approach								
Including Berwick Bank	Low	238.8	65,000	48,958	46,410	37,740	0.9943	0.8126
	High	247.5	65,000	48,958	46,410	37,368	0.9940	0.8061
Excluding Berwick Bank	Low	219.9	65,000	48,958	46,410	38,374	0.9947	0.8260
	High	222.0	65,000	48,958	46,410	38,262	0.9946	0.8238

11.5.3.5 The kittiwake feature of the East Caithness Cliffs is assessed as being in "Favourable Maintained" condition (NatureScot, ND). The recent count data (Burnell *et al*., 2023) indicates the current population is smaller than the citation population. The PVA results show that the kittiwake population is expected to remain stable in the absence of additional impacts, but will decline slightly under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.5.3.6 The median CGR is, for all scenarios, greater than 0.994 which indicates the population growth rate declines by less than 0.6%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8058 (SNCB approach; with Berwick Bank; High approach to assessment) to 0.8260 (Applicant's approach; without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of collision from the Salamander Project in combination with other projects is small, and, in the context of a population currently in favourable condition, is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.5.4 Kittiwake (distributional response and collision)

11.5.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-17** and **Table 11-20**) is presented in **Table 11-22**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-22 Kittiwake combined distributional response and collision mortalities apportioned to the East Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	94.5	129.2	123.9	189.2	67.6	92.8	286.0	411.2
Green Volt	0.3	0.4	0.9	1.0	0.4	0.5	1.6	1.9
West of Orkney	3.1	3.7	2.9	3.8	2.5	2.9	8.5	10.5
Pentland	0.0	0.0	0.7	0.7	0.0	0.0	0.7	0.7
Berwick Bank alone	15.0	24.1	0.4	0.6	8.1	16.3	23.5	41.0
Salamander (SNCB approach)	0.1	0.2	1.7	2.8	0.1	0.1	1.9	3.1
Salamander (Applicant's approach)	0.1	0.1	1.3	1.3	0.1	0.1	1.4	1.4
Total (including Berwick Bank) (SNCB approach)	**98.0**	**133.5**	**130.1**	**197.6**	**70.6**	**96.3**	**298.7**	**427.4**
Total (excluding Berwick Bank) (SNCB approach)	**83.0**	**109.4**	**129.7**	**197.0**	**62.5**	**80.0**	**275.2**	**386.4**
Total (including Berwick Bank) (Applicant's approach)	**98.0**	**133.5**	**129.7**	**197.1**	**70.5**	**96.3**	**298.2**	**426.9**
Total (excluding Berwick Bank) (Applicant's approach)	**83.0**	**109.4**	**129.3**	**196.5**	**62.4**	**80.0**	**274.7**	**385.9**

11.5.4.2 With a citation population of 65,000 breeding adults, 275.2 to 427.4 additional annual mortalities represents a 0.423 to 0.658 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 274.7 to 426.9 (Applicant's approach), there is a percentage point increase in mortality of 0.423 to 0.657. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.5.4.3 The PVA results are summarised in **Table 11-23**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-23 Summary of Population Viability Analysis results for combined annual distributional response and collision impacts on kittiwake at the East Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	298.7	65,000	48,958	46,410	35,923	0.9928	0.7707
	High	427.4	65,000	48,958	46,410	31,898	0.9897	0.6883
Excluding Berwick Bank	Low	275.2	65,000	48,958	46,410	36,467	0.9934	0.7867
	High	386.4	65,000	48,958	46,410	33,142	0.9907	0.7136
Applicant's approach								
Including Berwick Bank	Low	298.2	65,000	48,958	46,410	35,912	0.9928	0.7708
	High	426.9	65,000	48,958	46,410	31,902	0.9897	0.6886
Excluding Berwick Bank	Low	274.7	65,000	48,958	46,410	36,511	0.9934	0.7869
	High	385.9	65,000	48,958	46,410	33,096	0.9907	0.7141

11.5.4.4 The kittiwake feature of the East Caithness Cliffs SPA is assessed as being in "Favourable Maintained" condition (NatureScot, ND). The recent count data (Burnell *et al*., 2023) indicates the current population is smaller than the citation population. The PVA results show that the kittiwake population is expected to remain stable in the absence of additional impacts, but will decline under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.5.4.5 The median CGR is, for all scenarios, greater than 0.989 which indicates the population growth rate declines by less than 1.1%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.6883 (SNCB approach; with Berwick Bank; High approach to assessment) to 0.7869 (Applicant's approach; without Berwick Bank; Low approach to assessment).

11.5.4.6 For both high and low assessment scenarios if Berwick Bank is excluded and under the low assessment scenario including Berwick Bank, the impact is small, and, in the context of a population currently in favourable condition, will be of low magnitude. This will therefore not adversely affect kittiwake being maintained as a viable component of the site and a conclusion of no AEOI can be drawn (following the approach to assessment defined in **Section 11**). However, for context and on a without prejudice basis, under the high scenario (in which the Salamander Project would contribute just 3.1 individuals) including Berwick Bank, the magnitude of the impact would be sufficient that it would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives with regards to maintaining the kittiwake feature as a viable component in the long term.

11.5.4.7 It should be noted that the high approach to assessment is considered to be highly precautionary, while the low approach is aligned with the best available evidence and falls within the range of the preferred NatureScot parameters for distributional response (see **Section 7.2.2**). Further, kittiwake at East Caithness Cliffs SPA are included in a without prejudice derogation case for West of Orkney (West of Orkney Wind Farm, 2023) and Green Volt (Green Volt, 2023) (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (10.1-12.4 kittiwake combined excluding Berwick Bank, 32.1-51.9 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site. Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.5.4.8 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 107.3 to 206.33 birds per annum. This would result in additional mortality of 0.219 – 0.421%. For a moderate prey year, which is a typical SeabORD result to report, it was estimated that 161.0 birds per annum would face mortality. These estimates are lower than the lower estimates produced by the Applicant’s approach (Berwick Bank was included in SeabORD runs) with SeabORD seen as more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. Therefore, the Applicant’s approach is to rely on the results of the matrix approach for assessment. The SeabORD results provide additional confidence that the results of the matrix approach are both reasonable and precautionary.

11.5.5 Razorbill (distributional response)

11.5.5.1 The distributional response mortality from other relevant projects is given in **Table 11-24**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-24 Razorbill distributional response mortalities apportioned to the East Caithness Cliffs Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A	10.6	83.1	13.7	5.6	113.0
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	31.8	138.5	41.2	17.0	228.5
UK North Sea projects	SSE Renewables (2022a)	Developer	8.8	23.1	11.4	4.5	47.8
Green Volt	Green Volt (2023)	SNCB Low	8.9	20.1	n/a	n/a	29.0
Green Volt	Green Volt (2023)	SNCB High	26.7	33.4	n/a	n/a	60.1
Green Volt	Green Volt (2023)	Developer	7.4	5.6	n/a	n/a	13.0
West of Orkney	Offshore Wind Power Limited (2023)	Low	0.0	0.6	0.0	n/a	0.7
West of Orkney	Offshore Wind Power Limited (2023)	Mid	0.1	0.8	0.1	n/a	1.0
West of Orkney	Offshore Wind Power Limited (2023)	High	0.1	1.0	0.1	n/a	1.3
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of razorbill (and therefore cannot be applied in-combination).	n/a	0.2	n/a	n/a	0.2
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	n/a	0.96	n/a	4.41	5.4

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	n/a	1.61	n/a	13.28	14.9
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	n/a	0.28	n/a	3.66	3.9

11.5.5.2 The total in-combination mortalities is presented in **Table 11-25** The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-25 Razorbill distributional response mortalities apportioned to the East Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)									
	Spring / non-breeding		Breeding		Autumn		Winter		Annual total	
	Low	High	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	8.8	31.8	23.1	138.5	11.4	41.2	4.5	17.0	47.8	228.5
Green Volt	7.4	26.7	5.6	33.4	0.0	0.0	0.0	0.0	13.0	60.1
West of Orkney	0.0	0.1	0.6	1.0	0.0	0.1	0.0	1.3	0.7	2.6
Pentland	n/a	n/a	0.2	0.2	n/a	n/a	n/a	n/a	0.2	0.2
Berwick Bank alone	0.0	0.0	0.3	1.6	0.0	0.0	3.7	13.3	3.9	14.9
Salamander	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.3	0.1	0.6
Total (including Berwick Bank)	**16.3**	**58.6**	**29.8**	**174.7**	**11.5**	**41.6**	**8.2**	**31.9**	**65.7**	**306.8**
Total (excluding Berwick Bank)	**16.3**	**58.6**	**29.5**	**173.1**	**11.5**	**41.6**	**4.5**	**18.6**	**61.8**	**291.9**

11.5.5.3 With a citation population of 21,172 breeding adults, 61.8 to 306.8 additional annual mortalities represents a 0.292 to 1.449 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.5.5.4 The PVA results are summarised in **Table 11-26**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-26 Summary of Population Viability Analysis results for annual distributional response on razorbill at the East Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (calculated from Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	65.7	21,172	40,373	14,644	13,625	0.9981	0.9333
	High	306.8	21,172	40,373	14,644	10,588	0.9911	0.7246
Excluding Berwick Bank	Low	61.8	21,172	40,373	14,644	13,735	0.9982	0.9377
	High	291.9	21,172	40,373	14,644	10,767	0.9915	0.7355

11.5.5.5 The razorbill population at the East Caithness Cliffs SPA has grown from its citation level of 21,172 to 40,373 based on recent count data (Burnell *et al.*, 2023) and is assessed as being in a "Favourable Maintained" condition.

11.5.5.6 Under the low approach, which presents the Applicant's approach to the assessment, whether Berwick Bank is included or excluded, the magnitude of the impact, being 61.8 to 65.7 birds (to which the Salamander Project contributes just 0.1 individuals, and as outlined under **Section 11.2** a *de minimis* contribution) is small to negligible, with a CGR of 0.9981 to 0.9982 and a CPS of 0.9333 to 0.9377. This level of impact cannot be said to adversely affect the probability of razorbill being maintained as a feature of the East Caithness Cliffs SPA.

11.5.5.7 However, without prejudice to the Applicant's position, under the high approach (representing the upper end of the SNCBs parameters), whether Berwick Bank is included or excluded, the magnitude of the impact is more significant with a CGR of 0.9911 to 0.9915 and a CPS of 0.7246 to 0.7355. The PVA model predicts an overall population decline to below the citation level (albeit this result is contrary to the recent population growth). The high approach level of impact in-combination would be sufficient to be considered to have an adverse effect on maintaining the integrity of the population of razorbill at East Caithness Cliffs SPA (to which the Salamander Project contributes just 0.6 individuals, and as outlined under **Section 11.2** a *de minimis* contribution). However, it should be noted that the "high" approach to assessment is considered to be overly precautionary, as outlined in **Section 7.2.2**. It should also be noted that there is potential for the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, to significantly benefit razorbill populations.

11.5.5.8 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 363.3 to 829.7 birds per annum. This would result in additional mortality of 0.901 – 2.056%. For a moderate prey year, which is a typical SeabORD metric to report, it was estimated that 596.3 birds per annum would face mortality. These estimates are substantially higher than those estimated by the matrix approach.

11.5.5.9 SeabORD is seen as being more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. Therefore, the Applicant's approach is to rely on the results of the matrix approach for assessment.

11.5.5.10 Therefore, following the Applicant's low approach would be more consistent with the available evidence, and under that approach a conclusion of no adverse effect can be drawn.

11.5.6 Conclusion for the East Caithness Cliffs Special Protection Area in-combination

11.5.6.1 If Berwick Bank is excluded, under all assessment scenarios it can be concluded that there is, therefore, no potential for an AEOI for kittiwake in view of the conservation objectives of the East Caithness Cliffs SPA either alone or in-combination with other plans or projects and therefore, subject to natural change, the kittiwake feature of the East Caithness Cliffs SPA will be maintained in the long term.

11.5.6.2 However, if Berwick Bank is included, under the high approach only, there is potential for an AEOI for kittiwake in view of the conservation objectives of the East Caithness Cliffs SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.5.6.3 For razorbill, under the Applicant's approach with or without Berwick, there is no potential for an AEOI in view of the conservation objectives of the East Caithness Cliffs SPA from the Salamander Project in-combination with other plans or projects.

11.5.6.4 However, without prejudice to the Applicant's position, under the high SNCB scenario (in which the Salamander Project would contribute at most 0.6 individuals) both with and without Berwick Bank, the magnitude of impact from in-combination effects has potential to result in an AEOI for razorbill in view of the conservation objectives of the East Caithness Cliffs SPA. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.6 Ornithology In-combination Assessment for the Farne Islands Special Protection Area

11.6.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Farne Islands SPA are:

- Kittiwake (distributional response and collision); and
- Puffin (distributional response).

11.6.2 Kittiwake (distributional response)

11.6.2.1 The distributional response mortality from other relevant projects is given in **Table 11-27**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-27 Kittiwake distributional response mortalities apportioned to the Farne Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	1.4	2.5	0.9	4.8
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	4.1	7.5	2.7	14.3
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	5	n/a	5.0
Green Volt	Green Volt (2023)	Low	0	0	0	0.0
Green Volt	Green Volt (2023)	High	0	0	0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a 43% reduction in kittiwake numbers for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	0.3	2.5	0.2	3.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	0.9	7.5	0.5	8.9
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	5	n/a	5.0

11.6.2.2 The total in-combination mortalities is presented in **Table 11-28**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-28 Kittiwake distributional response mortalities apportioned to the Farne Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	1.4	4.1	2.5	7.5	0.9	2.7	4.8	14.3
Green Volt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	0.3	0.9	2.5	7.5	0.2	0.5	3.0	8.9
Salamander	0.0	0.0	0.1	0.2	n/a	n/a	0.1	0.2
Total (including Berwick Bank)	**1.4**	**4.1**	**2.6**	**7.7**	**0.9**	**2.7**	**4.9**	**14.5**
Total (excluding Berwick Bank)	**1.1**	**3.2**	**0.1**	**0.2**	**0.7**	**2.2**	**1.9**	**5.6**

11.6.2.3 With a citation population of 8,241 breeding adults, 1.9 to 14.5 additional annual mortalities represents a 0.023 to 0.176 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.6.2.4 The PVA results are summarised in **Table 11-29**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-29 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the Farne Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	4.9	8,241	8,804	8,346	8,177	0.9993	0.9768
	High	**14.5**	**8,241**	**8,804**	**8,346**	**7,824**	**0.9981**	**0.9330**
Excluding Berwick Bank	**Low**	**1.9**	**8,241**	**8,804**	**8,346**	**8,271**	**0.9997**	**0.9902**
	High	**5.6**	**8,241**	**8,804**	**8,346**	**8,129**	**0.9993**	**0.9737**

11.6.2.5 The kittiwake population of the Farne Islands SPA appears to be relatively stable. The recent count data (Burnell et al., 2023) indicates the current population is slightly larger than the citation population. A condition assessment for kittiwake at the Farne Islands is not currently available[28]. The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.998 which indicates the population growth rate declines by less than 0.2%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.9330 (with Berwick Bank; High approach to assessment) to 0.9902 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.6.3 Kittiwake (collision)

11.6.3.1 The collision mortality from other relevant projects is given in **Table 11-30**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

[28] https://designatedsites.naturalengland.org.uk/Marine/MarineFeatureCondition.aspx?SiteCode=UK9006021&SiteName=farne&SiteNameDisplay=Farne+Islands+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

Table 11-30 Kittiwake collision mortalities apportioned to the Farne Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	7	24.2	5.2	36.4
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	6.8	16.7	4.9	28.4
Green Volt	Green Volt (2023)		0	0.1	0	0.1
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined) (low)	0.2684	0	0.2098	0.5
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	0.2929	0	0.2289	0.5
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined) (high)	0.3173	0	0.248	0.6
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a 43% reduction in kittiwake numbers for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	1.3	24.2	0.9	26.4
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	1.1	16.7	0.5	18.3

11.6.3.2 The total in-combination mortalities is presented in **Table 11-31**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-31 Kittiwake collision mortalities apportioned to the Farne Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	6.8	7.0	16.7	24.2	4.9	5.2	28.4	36.4
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.3	0.3	0.0	0.0	0.2	0.2	0.5	0.6
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	1.1	1.3	16.7	24.2	0.5	0.9	18.3	26.4
Salamander (SNCB approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Salamander (Applicant's approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Total (including Berwick Bank) (SNCB approach)	**7.1**	**7.3**	**16.9**	**24.4**	**5.1**	**5.5**	**29.1**	**37.2**
Total (excluding Berwick Bank) (SNCB approach)	**6.0**	**6.0**	**0.2**	**0.2**	**4.6**	**4.6**	**10.8**	**10.8**
Total (including Berwick Bank) (Applicant's approach)	**7.1**	**7.3**	**16.9**	**24.4**	**5.1**	**5.5**	**29.1**	**37.2**
Total (excluding Berwick Bank) (Applicant's approach)	**6.0**	**6.0**	**0.2**	**0.2**	**4.6**	**4.6**	**10.8**	**10.8**

11.6.3.3 With a citation population of 8,241 breeding adults, 10.8 to 37.2 additional annual mortalities for both the SNCB approach and Applicant's approach represents a 0.131 to 0.451 percentage point increase in mortality rates.

11.6.3.4 The PVA results are summarised in **Table 11-32**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-32 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the Farne Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	29.1	8,241	8,804	8,346	7,247	0.9961	0.8685
	High	37.2	8,241	8,804	8,346	6,974	0.9950	0.8353
Excluding Berwick Bank	Low	10.8	8,241	8,804	8,346	7,921	0.9986	0.9500
	High	10.8	8,241	8,804	8,346	7,917	0.9986	0.9494
Applicant's approach								
Including Berwick Bank	Low	29.1	8,241	8,804	8,346	7,266	0.9961	0.8684
	High	37.2	8,241	8,804	8,346	6,962	0.9950	0.8350
Excluding Berwick Bank	Low	10.8	8,241	8,804	8,346	7,906	0.9985	0.9489
	High	10.8	8,241	8,804	8,346	7,902	0.9986	0.9494

11.6.3.5 The kittiwake population of the Farne Islands SPA appears to be relatively stable. The recent count data (Burnell *et al*., 2023) indicates the current population is slightly larger than the citation population. The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.995 which indicates the population growth rate declines by less than 0.5%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8353 (with Berwick Bank; High approach to assessment) to 0.9494 (without Berwick Bank; High approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.6.4 Kittiwake (distributional response and collision)

11.6.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-28** and **Table 11-31**) is presented in **Table 11-33**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-33 Kittiwake combined distributional response and collision mortalities apportioned to the Farne Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	8.2	11.1	19.2	31.7	5.8	7.9	33.2	50.7
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.3	0.3	0.0	0.0	0.2	0.2	0.5	0.6
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	1.4	2.2	19.2	31.7	0.7	1.4	21.3	35.3
Salamander (SNCB approach)	0.0	0.0	0.2	0.3	0.0	0.0	0.2	0.3
Salamander (Applicant's approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Total (including Berwick Bank) (SNCB approach)	**8.5**	**11.4**	**19.5**	**32.1**	**6.0**	**8.1**	**34.0**	**51.7**
Total (excluding Berwick Bank) (SNCB approach)	**7.1**	**9.2**	**0.3**	**0.4**	**5.3**	**6.7**	**12.7**	**16.4**
Total (including Berwick Bank) (Applicant's approach)	**8.5**	**11.4**	**19.4**	**31.9**	**6**	**8.1**	**33.9**	**51.5**
Total (excluding Berwick Bank) (Applicant's approach)	**7.1**	**9.2**	**0.2**	**0.2**	**5.3**	**6.7**	**12.6**	**16.2**

11.6.4.2 With a citation population of 8,241 breeding adults, 12.7 to 51.7 additional annual mortalities represents a 0.154 to 0.627 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 12.6 to 51.5 (Applicant's approach), there is a percentage point increase in mortality of 0.153 to 0.625. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.6.4.3 The PVA results are summarised in **Table 11-34**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-34 Summary of Population Viability Analysis results for combined annual collision and distributional response impacts on kittiwake at the Farne Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	34.0	8,241	8,804	8,346	7,076	0.9954	0.8484
	High	51.7	8,241	8,804	8,346	6,509	0.9931	0.7784
Excluding Berwick Bank	Low	12.7	8,241	8,804	8,346	7,860	0.9983	0.9411
	High	16.4	8,241	8,804	8,346	7,696	0.9978	0.9246
Applicant's approach								
Including Berwick Bank	Low	33.9	8,241	8,804	8,346	7,067	0.9954	0.8480
	High	51.5	8,241	8,804	8,346	6,507	0.9931	0.7789
Excluding Berwick Bank	Low	12.6	8,241	8,804	8,346	7,851	0.9983	0.9407
	High	16.2	8,241	8,804	8,346	7,693	0.9978	0.9250

11.6.4.4 The kittiwake population of the Farne Islands SPA appears to be relatively stable. The recent count data (Burnell *et al*., 2023) indicates the current population is slightly larger than the citation population. The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.993 which indicates the population growth rate declines by less than 0.7%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.7784 (with Berwick Bank; High approach to assessment) to 0.9407 (without Berwick Bank; Low approach to assessment).

11.6.4.5 For both SNCB and Applicant assessment scenarios if Berwick Bank is excluded and under the low assessment scenario including Berwick Bank, the impact is small, and will be of low magnitude. This will therefore not adversely affect kittiwake being maintained as a viable component of the site and a conclusion of no AEOI can be drawn (following the approach to assessment defined in **Section 11**). In any case, a project level impact of at most 0.3 individuals would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any in-combination effect.

11.6.4.6 However, for context and on a without prejudice basis, under the high SNCB scenario (in which the Salamander Project would contribute at most 0.3 individuals) including Berwick Bank, the magnitude of the impact would be sufficient that it would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives with regards to maintaining the kittiwake feature as a viable component in the long term.

11.6.4.7 It should be noted that the high approach to assessment is considered to be highly precautionary, while the low approach is aligned with the best available evidence and falls within the range of the preferred NatureScot parameters (see **Section 7.2.2**). Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary. In addition, Berwick Bank is pending determination of consent at the time of writing and the impact is therefore not confirmed (and, given the compensation plan that forms part of the Berwick Bank application has the potential to be removed from the in-combination totals once any such compensation is agreed).

11.6.5 Puffin (distributional response)

11.6.5.1 The distributional response mortality from other relevant projects is given in **Table 11-35.** Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-35 Puffin distributional response mortalities apportioned to the Farne Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
UK North Sea projects	SSE Renewables (2022a)	Scoping A	17.3	n/a	17.3
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	28.8	n/a	28.8
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	4.9	n/a	4.9
Green Volt	Green Volt (2023)	SNCB Low	0	0	0.0
Green Volt	Green Volt (2023)	SNCB High (high)	0	0.1	0.1
Green Volt	Green Volt (2023)	Developer (low)	0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Low	0	1.7	1.7
West of Orkney	Offshore Wind Power Limited (2023)	Mid	0	3.4	3.4

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
West of Orkney	Offshore Wind Power Limited (2023)	High	0	5.2	5.2
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in puffin numbers for the project to a total of 1 adult and 0.6 chicks (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	12.9	n/a	12.9
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	21.4	n/a	21.4
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	3.6	n/a	3.6

11.6.5.2 The total in-combination mortalities is presented in **Table 11-36**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3** regardless of the low or high approach) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-36 Puffin distributional response mortalities apportioned to the Farne Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	4.9	28.8	0.0	0.0	4.9	28.8
Green Volt	0.0	0.0	0.0	0.1	0.0	0.1
West of Orkney	0.0	0.0	1.7	5.2	1.7	5.2
Pentland	n/a	n/a	n/a	n/a	0.0	0.0

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
Berwick Bank alone	3.6	21.4	0.0	0.0	3.6	21.4
Salamander	0.4	2.5	n/a	n/a	0.4	2.5
Total (including Berwick Bank)	**5.3**	**31.3**	**1.7**	**5.3**	**7.0**	**36.6**
Total (excluding Berwick Bank)	**1.7**	**9.9**	**1.7**	**5.3**	**3.4**	**15.2**

11.6.5.3 With a citation population of 76,798 breeding adults, 3.4 to 36.6 additional annual mortalities represents a 0.004 to 0.048 percentage point increase in mortality rates. Therefore, PVA has been carried out for the scenarios that exceed the threshold to further assess the total in-combination impact, specifically under the upper limit of the SNCBs approach the "High" approach (with and without Berwick Bank). It should be noted that under the "Low" approach, applying the Applicant's parameters, the increase in mortality rates does not exceed 0.02 percentage points and therefore no PVA is required. A condition assessment for puffin at the Farne Islands is not currently available.

11.6.5.4 The PVA results are summarised in **Table 11-37**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-37 Summary of Population Viability Analysis results for annual distributional response impacts on puffin at the Farne Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	7.0	76,798	Less than 0.02 percentage point increase in mortality – no PVA required and therefore AOEI				
	High	36.6	76,798	87,504	33,634	33,072	0.9995	0.9825
Excluding Berwick Bank	Low	3.4	76,798	Less than 0.02 percentage point increase in mortality – no PVA required and therefore AOEI				
	High	15.2	76,798	87,504	33,634	33,494	0.9998	0.9929

11.6.5.5 No PVA was required for the low approach (and therefore following the Applicant's approach) to assessment, with and without Berwick, with no adverse effect resulting under the low approach regardless of the inclusion of Berwick. The PVA results show that, under the more precautionary high approach to assessment, the population growth rate is 0.02% to 0.05% smaller than the counterfactual, leading to a population size that, after 35 years, is 0.71% to 1.75% smaller than the counterfactual population size. Overall, therefore, it is clear that the PVA results indicate that the impact levels modelled are negligible and would not adversely affect the puffin feature of the Farne Islands SPA, particularly under the low approach (noting that under that approach the Salamander Project contribution is 0.4 individuals per annum, a level that is deemed *de minimis* (**Section 11.2**)).

11.6.6 Conclusion for the Farne Islands Special Protection Area in-combination

11.6.6.1 If Berwick Bank is excluded, under all assessment scenarios it can be concluded that there is, therefore, no potential for an AEOI for kittiwake and puffin in view of the conservation objectives of the Farne Islands either alone or in-combination with other plans or projects and therefore, subject to natural change, the kittiwake and puffin features of the Farne Islands will be maintained in the long term.

11.6.6.2 For context and on a without prejudice basis, if Berwick Bank is included and under the high SNCB scenario only, there is potential for an AEOI for kittiwake (but not puffin) in view of the conservation objectives of the Farne Islands with respect to the in-combination values. The project level impact under this scenario, being at most 0.3 individuals, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any in-combination effect. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.7 Ornithology In-combination Assessment for the Forth Islands Special Protection Area

11.7.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Forth Islands SPA are:

- Kittiwake (distributional response and collision);
- Puffin (distributional response); and
- Gannet (distributional response and collision).

11.7.2 Kittiwake (distributional response)

11.7.2.1 The distributional response mortality from other relevant projects is given in **Table 11-38**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-38 Kittiwake distributional response mortalities apportioned to the Forth Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	1.2	8.9	0.8	10.9

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	3.7	26.6	2.4	32.7
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	17.7	n/a	17.7
Green Volt	Green Volt (2023)	Low	0	0	0	0.0
Green Volt	Green Volt (2023)	High	0	0	0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	0.2	3.2	0.1	3.5
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	0.7	9.5	0.4	10.6
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	6.3	n/a	6.3

11.7.2.2 The total in-combination mortalities is presented in **Table 11-39.** The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-39 Kittiwake distributional response mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	1.2	3.7	8.9	26.6	0.8	2.4	10.9	32.7
Green Volt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	0.2	0.7	3.2	9.5	0.1	0.4	3.5	10.6
Salamander	0.0	0.0	0.1	0.2	n/a	n/a	0.1	0.3
Total (including Berwick Bank)	**1.2**	**3.7**	**9.0**	**26.8**	**0.8**	**2.4**	**11.0**	**33.0**
Total (excluding Berwick Bank)	**1.0**	**3.0**	**5.8**	**17.3**	**0.7**	**2.0**	**7.5**	**22.4**

11.7.2.3 With a citation population of 16,800 breeding adults, 7.5 to 33.0 additional annual mortalities represents a 0.045 to 0.196 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.7.2.4 The PVA results are summarised in **Table 11-40**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-40 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	11.0	16,800	9,084	8,617	8,178	0.9986	0.9503
	High	33.0	16,800	9,084	8,617	7,376	0.9957	0.8562

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Excluding Berwick Bank	Low	7.5	16,800	9,084	8,617	8,322	0.9990	0.9656
	High	22.4	16,800	9,084	8,617	7,758	0.9971	0.9002

11.7.2.5 The kittiwake population of the Forth Islands SPA has declined between its citation in recent counts (Burnell *et al*., 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.7.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.995 which indicates the population growth rate declines by less than 0.5%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8562 (with Berwick Bank; High approach to assessment) to 0.9656 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.7.3 Kittiwake (collision)

11.7.3.1 The collision mortality from other relevant projects is given in **Table 11-41**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-41 Kittiwake collision mortalities apportioned to the Forth Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	6.3	46.3	4.6	57.2
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	6	36.8	4.3	47.1
Green Volt	Green Volt (2023)		0	0.1	0	0.1

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	0.2416	0.0023	0.1889	0.4
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	0.2637	0	0.2061	0.5
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	0.2857	0	0.2233	0.5
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	1.1	30.7	0.7	32.5
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.9	21.2	0.4	22.5

11.7.3.2 The total in-combination mortalities is presented in **Table 11-42.** The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-42 Kittiwake collision mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	6.0	6.3	36.8	46.3	4.3	4.6	47.1	57.2
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.2	0.3	0.0	0.0	0.2	0.2	0.4	0.5

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	0.9	1.1	21.2	30.7	0.4	0.7	22.5	32.5
Salamander (SNCB approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Salamander (Applicant's approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Total (including Berwick Bank) (SNCB approach)	**6.2**	**6.6**	**37.1**	**46.6**	**4.5**	**4.8**	**47.8**	**58.0**
Total (excluding Berwick Bank) (SNCB approach)	**5.3**	**5.5**	**15.9**	**15.9**	**4.1**	**4.1**	**25.3**	**25.5**
Total (including Berwick Bank) (Applicant's approach)	**6.2**	**6.6**	**36.9**	**46.4**	**4.5**	**4.8**	**47.7**	**57.9**
Total (excluding Berwick Bank) (Applicant's approach)	**5.3**	**5.5**	**15.7**	**15.7**	**4.1**	**4.1**	**25.2**	**25.4**

11.7.3.3 With a citation population of 16,800 breeding adults, 25.3 to 58.0 additional annual mortalities represents a 0.151 to 0.345 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 25.2 to 57.9 (Applicant's approach), there is a percentage point increase in mortality of 0.150 to 0.345. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.7.3.4 The PVA results are summarised in **Table 11-43**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-43 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
	Low	47.8	16,800	9,084	8,617	6,880	0.9938	0.7989

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	High	58.0	16,800	9,084	8,617	6,560	0.9924	0.7611
Excluding Berwick Bank	Low	25.3	16,800	9,084	8,617	7,667	0.9967	0.8885
	High	25.5	16,800	9,084	8,617	7,644	0.9967	0.8876
Applicant's approach								
Including Berwick Bank	Low	47.7	16,800	9,084	8,617	6,888	0.9938	0.7984
	High	57.9	16,800	9,084	8,617	6,555	0.9925	0.7619
Excluding Berwick Bank	Low	25.2	16,800	9,084	8,617	7,663	0.9967	0.8882
	High	25.4	16,800	9,084	8,617	7,633	0.9967	0.8875

11.7.3.5 The kittiwake population of the Forth Islands SPA has declined between its citation in recent counts (Burnell *et al.*, 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.7.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.992 which indicates the population growth rate declines by less than 0.8%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.7619 (with Berwick Bank; High approach to assessment) to 0.8882 (without Berwick Bank; Low approach to assessment).

11.7.3.7 When drawing a conclusion on the above in-combination values, it should be noted that the project level contribution, being at most 0.2 individuals per annum, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any in-combination effect. However without prejudice to the Applicant's position, it is acknowledged that whilst this level of in-combination impact is small, in the context of a population that is already declining. The additional mortality from the in combination values would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. Further consideration is given below in **Section 11.7.4** for the combined distributional response and collision.

11.7.4 Kittiwake (distributional response and collision)

11.7.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-39** and **Table 11-42**) is presented in **Table 11-44**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-44 Kittiwake combined distributional response and collision mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	7.2	10.0	45.7	72.9	5.1	7.0	58.0	89.9
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.2	0.3	0.0	0.0	0.2	0.2	0.4	0.5
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	1.1	1.8	24.4	40.2	0.5	1.1	26.0	43.1
Salamander (SNCB approach)	0.0	0.0	0.2	0.4	0.0	0.0	0.3	0.4
Salamander (Applicant's approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Total (including Berwick Bank) (SNCB approach)	**7.4**	**10.3**	**46.0**	**73.4**	**5.3**	**7.2**	**58.8**	**90.9**
Total (excluding Berwick Bank) (SNCB approach)	**6.3**	**8.5**	**21.6**	**33.2**	**4.8**	**6.1**	**32.8**	**47.8**
Total (including Berwick Bank) (Applicant's approach)	**7.4**	**10.3**	**46.0**	**73.2**	**5.3**	**7.2**	**58.7**	**90.7**
Total (excluding Berwick Bank) (Applicant's approach)	**6.3**	**8.5**	**21.6**	**33.0**	**4.8**	**6.1**	**32.7**	**47.6**

11.7.4.2 With a citation population of 16,800 breeding adults, 32.8 to 90.9 additional annual mortalities represents a 0.195 to 0.541 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 32.7 to 90.7 (Applicant's approach), there is a percentage point increase in mortality of 0.195 to 0.540. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.7.4.3 The PVA results are summarised in **Table 11-45**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-45 Summary of Population Viability Analysis results for annual combined distributional response and collision impacts on kittiwake at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	58.8	16,800	9,084	8,617	6,542	0.9923	0.7584
	High	90.9	16,800	9,084	8,617	5,610	0.9881	0.6509
Excluding Berwick Bank	Low	32.8	16,800	9,084	8,617	7,391	0.9957	0.8569
	High	47.8	16,800	9,084	8,617	6,879	0.9938	0.7989
Applicant's approach								
Including Berwick Bank	Low	58.7	16,800	9,084	8,617	6,534	0.9924	0.7590
	High	90.7	16,800	9,084	8,617	5,619	0.9882	0.6515
Excluding Berwick Bank	Low	32.7	16,800	9,084	8,617	7,384	0.9958	0.8580
	High	47.6	16,800	9,084	8,617	6,890	0.9938	0.7999

11.7.4.4 The kittiwake population of the Forth Islands SPA has declined between its citation in recent counts (Burnell *et al*., 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.7.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline under all impact scenarios considered.

11.7.4.6 Under the low approach, with or without Berwick Bank included, and under the high approach if Berwick Bank is excluded, the decline is only small, with a CGR greater than 0.988 and a CPS of 0.7584 to 0.8580. However, under the high approach and including Berwick Bank, the decline is more significant, with a CGR of 0.9881 and a CPS of 0.6509.

11.7.4.7 When drawing a conclusion on the above in-combination values, it should be noted that the project level contribution, being at most 0.2 individuals per annum under the Applicant's approach or 0.4 individuals per annum under the high SNCB approach, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any in-combination effect. However, it is acknowledged that whichever scenario or approach is considered, in the context of a population that is already declining and in unfavourable condition, the in-combination values would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives.

11.7.4.8 For context, the Applicant's approach falls within the range of the preferred NatureScot parameters for distributional response (see **Section 7.2.2**). Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.7.5 Puffin (distributional response)

11.7.5.1 The distributional response mortality from other relevant projects is given in **Table 11-46.** Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-46 Puffin distributional response mortalities apportioned to the Forth Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
UK North Sea projects	SSE Renewables (2022a)	Scoping A	159.4	n/a	159.4
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	265.5	n/a	265.5
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	44.3	n/a	44.3
Green Volt	Green Volt (2023)	SNCB Low	0.4	0.1	0.5
Green Volt	Green Volt (2023)	SNCB High (high)	0.6	0.2	0.8
Green Volt	Green Volt (2023)	Developer (low)	0.1	0.1	0.2
West of Orkney	Offshore Wind Power Limited (2023)	Low	0	2.7	2.7
West of Orkney	Offshore Wind Power Limited (2023)	Mid	0	5.4	5.4
West of Orkney	Offshore Wind Power Limited (2023)	High	0	8.0	8.0

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in puffin numbers for the project to a total of 1 adult and 0.6 chicks (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	18.2	n/a	18.2
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	30.2	n/a	30.2
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	5.1	n/a	5.1

11.7.5.2 The total in-combination mortalities is presented in **Table 11-47**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-47 Puffin distributional response mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	44.3	265.5	0.0	0.0	44.3	265.5
Green Volt	0.1	0.6	0.1	0.2	0.2	0.8
West of Orkney	0.0	0.0	2.7	8.0	2.7	8.0
Pentland	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	5.1	30.2	0.0	0.0	5.1	30.2
Salamander	0.6	3.8	n/a	n/a	0.6	3.8

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
Total (including Berwick Bank)	**45.0**	**269.9**	**2.8**	**8.6**	**47.8**	**278.5**
Total (excluding Berwick Bank)	**39.9**	**239.7**	**2.8**	**8.6**	**42.7**	**248.3**

11.7.5.3 With a citation population of 28,000 breeding adults, 42.7 to 278.5 additional annual mortalities represents a 0.153 to 0.995 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.7.5.4 The PVA results are summarised in **Table 11-48**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-48 Summary of Population Viability Analysis results for annual distributional response on puffin at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	47.8	28,000	85,846	33,079	32,251	0.9993	0.9767
	High	278.5	28,000	85,846	33,079	28,742	0.9962	0.8716
Excluding Berwick Bank	Low	42.7	28,000	85,846	33,079	32,284	0.9994	0.9789
	High	248.3	28,000	85,846	33,079	29,251	0.9966	0.8850

11.7.5.5 The puffin population at the Forth Islands SPA has grown from its citation level of 28,000 to 85,846 based on recent count data (Burnell *et al.*, 2023) and is assessed as being in a "Favourable Declining" condition.

11.7.5.6 Under the low approach, whether Berwick Bank is included or excluded, the magnitude of the impact is negligible, with a CGR of 0.9993 to 0.9994 and a CPS of 0.9767 to 0.9789. In addition, under this approach the Salamander Project contribution is 0.6 individuals per annum, a *de minimis* contribution (**Section 11.2**).

11.7.5.7 Under the high approach, whether Berwick Bank is included or excluded, the magnitude of the impact is small with a CGR of 0.9962 to 0.9966 and a CPS of 0.8716 to 0.8850. Given the population's favourable condition, and significant growth since the citation, this level of impact is of a magnitude that cannot be said to adversely affect the probability of puffin being maintained as a feature of the Forth Islands SPA.

11.7.6 Gannet (distributional response)

11.7.6.1 The distributional response mortality from other relevant projects is given in **Table 11-49**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-49 Gannet distributional response mortalities apportioned to the Forth Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	7.4	102.5	33.9	143.8
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	22.3	305.6	101.4	429.3
UK North Sea projects	SSE Renewables (2022a)	Developer	7.4	102.5	33.9	143.8
Green Volt	Green Volt (2023)	SNCB Low	0.2	0.3	0	0.5
Green Volt	Green Volt (2023)	SNCB High (high)	0.5	0.9	0.1	1.5
Green Volt	Green Volt (2023)	Developer Low (low)	0.1	0.2	0	0.3
Green Volt	Green Volt (2023)	Developer High	0.2	0.2	0	0.4
West of Orkney	Offshore Wind Power Limited (2023)	(Distributional response not available separately – only combined with collision)	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of gannet (and therefore cannot be applied in-combination).	0	0.11	0	0.1
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	0.7	29.4	2	32.1
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	2	86.5	5.7	94.2

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.7	29.4	2	32.1

11.7.6.2 The total in-combination mortalities is presented in **Table 11-50.** The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3**) and the upper end of the SNCB values (the high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-50 Gannet distributional response mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	7.4	22.3	102.5	305.6	33.9	101.4	143.8	429.3
Green Volt	0.1	0.5	0.2	0.9	0.0	0.1	0.3	1.5
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Berwick Bank alone	0.7	2.0	29.4	86.5	2.0	5.7	32.1	94.2
Salamander	0.8	2.4	0.1	0.3	n/a	n/a	0.9	2.7
Total (including Berwick Bank)	**8.4**	**25.2**	**102.9**	**306.9**	**33.9**	**101.5**	**145.1**	**433.6**
Total (excluding Berwick Bank)	**7.7**	**23.2**	**73.5**	**220.4**	**31.9**	**95.8**	**113.0**	**339.4**

11.7.6.3 With a citation population of 43,200 breeding adults, 113.0 to 433.6 additional annual mortalities represents a 0.262 to 1.004 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.7.6.4 The PVA results are summarised in **Table 11-51**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-51 Summary of Population Viability Analysis results for annual distributional response impacts on gannet at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	145.1	43,200	150,518	186,052	178,765	0.9989	0.9600
	High	433.6	43,200	150,518	186,052	164,724	0.9966	0.8851
Excluding Berwick Bank	Low	113.0	43,200	150,518	186,052	180,217	0.9991	0.9688
	High	339.4	43,200	150,518	186,052	169,099	0.9974	0.9090

11.7.6.5 The gannet population at the Forth Islands SPA has grown from its citation level of 43,200 to 150,518 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in **Section 11**. The PVA results show that the gannet population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.996 which indicates the population growth rate declines by less than 0.4%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8851 (with Berwick Bank; High approach to assessment) to 0.9688 (without Berwick Bank; Low approach to assessment). This level of impact is small, and in the context of substantial growth between the SPA citation population and recent counts (Burnell *et al.*, 2023), and with the population expected to continue to grow in the PVA results, the PVA results indicate that there is no prospect for the impact to adversely affect the site from achieving its conservation objectives.

11.7.7 Gannet (collision)

11.7.7.1 The collision mortality from other relevant projects is given in **Table 11-52**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-52 Gannet collision mortalities apportioned to the Forth Islands Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	54.7	508.8	122.0	685.5

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	54.4	481.8	121.1	657.3
Green Volt	Green Volt (2023)		1.2	6.4	0.1	7.7
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	7.6	0.0	5.1	12.7
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	7.6	0.0	7.3	14.9
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	10.2	0.0	9.5	19.7
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of gannet (and therefore cannot be applied in-combination).	0.0	0.2	0.0	0.2
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	1.0	146.8	3.2	151.0
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.8	119.7	2.3	122.8

11.7.7.2 The total in-combination mortalities is presented in **Table 11-53**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-53 Gannet collision mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	54.4	54.7	481.8	508.8	121.1	122.0	657.3	685.5

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Green Volt	1.2	1.2	6.4	6.4	0.1	0.1	7.7	7.7
West of Orkney	7.6	10.2	0.0	0.0	5.1	9.5	12.7	19.7
Pentland	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Berwick Bank alone	0.8	1.0	119.7	146.8	2.3	3.2	122.8	151.0
Salamander (SNCB approach)	0.3	0.3	0.2	0.2	0.6	0.6	1.1	1.1
Salamander (Applicant's approach)	0.2	0.2	0.1	0.1	0.4	0.4	1.0	1.0
Total (including Berwick Bank) (SNCB approach)	**63.5**	**66.4**	**488.6**	**515.6**	**126.9**	**132.2**	**679.0**	**714.2**
Total (excluding Berwick Bank) (SNCB approach)	**62.7**	**65.4**	**368.9**	**368.8**	**124.6**	**129.0**	**556.2**	**563.2**
Total (including Berwick Bank) (Applicant's approach)	**63.3**	**66.3**	**488.6**	**515.6**	**126.7**	**131.9**	**678.6**	**713.8**
Total (excluding Berwick Bank) (Applicant's approach)	**62.5**	**65.3**	**368.9**	**368.8**	**124.4**	**128.7**	**555.8**	**562.8**

11.7.7.3 With a citation population of 43,200 breeding adults, 556.2 to 714.2 additional annual mortalities represents a 1.288 to 1.653 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 555.8 to 713.8 (Applicant's approach), there is a percentage point increase in mortality of 1.287 to 1.652. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.7.7.4 The PVA results are summarised in **Table 11-54**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-54 Summary of Population Viability Analysis results for annual collision impacts on gannet at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	679.0	43,200	150,518	186,038	153,602	0.9947	0.8259
	High	714.2	43,200	150,518	186,038	152,020	0.9944	0.8177
Excluding Berwick Bank	Low	556.2	43,200	150,518	186,038	158,888	0.9957	0.8550
	High	563.2	43,200	150,518	186,038	158,596	0.9956	0.8532
Applicant's approach								
Including Berwick Bank	Low	678.6	43,200	150,518	186,038	153,768	0.9947	0.8259
	High	713.8	43,200	150,518	186,038	152,016	0.9944	0.8178
Excluding Berwick Bank	Low	555.8	43,200	150,518	186,038	159,121	0.9957	0.8550
	High	562.8	43,200	150,518	186,038	158,746	0.9956	0.8533

11.7.7.5 The gannet population at the Forth Islands SPA has grown from its citation level of 43,200 to 150,518 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in Section 11. The PVA results show that the gannet population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.994 which indicates the population growth rate declines by less than 0.6%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8177 (SNCB approach; with Berwick Bank; High approach to assessment) to 0.8550 (Applicant's approach; without Berwick Bank; Low approach to assessment). This level of impact is small, and in the context of substantial growth between the SPA citation population and recent counts (Burnell *et al.*, 2023), and with the population expected to continue to grow, the PVA results indicate that there is no prospect for the impact to adversely affect the site from achieving its conservation objectives.

11.7.8 Gannet (distributional response and collision)

11.7.8.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-50** and **Table 11-53**) is presented in **Table 11-55**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-55 Gannet combined distributional response and collision mortalities apportioned to the Forth Islands Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	61.8	77.0	584.3	814.4	155.0	223.4	801.1	1,114.8
Green Volt	1.3	1.7	6.6	7.3	0.1	0.2	8.0	9.2
West of Orkney	7.6	10.2	0.0	0.0	5.1	9.5	12.7	19.7
Pentland	0.0	0.0	0.3	0.3	0.0	0.0	0.3	0.3
Berwick Bank alone	1.5	3.0	149.1	233.3	4.3	8.9	154.9	245.2
Salamander (SNCB approach)	1.1	2.7	0.3	0.5	0.6	0.6	2.0	3.8
Salamander (Applicant's approach)	1.0	1.0	0.2	0.2	0.4	0.4	1.6	1.6
Total (including Berwick Bank) (SNCB approach)	**71.7**	**91.6**	**591.6**	**822.5**	**160.8**	**233.7**	**824.2**	**1,147.8**
Total (excluding Berwick Bank) (SNCB approach)	**70.2**	**88.6**	**442.5**	**589.2**	**156.5**	**224.8**	**669.3**	**902.6**
Total (including Berwick Bank) (Applicant's approach)	**71.6**	**91.5**	**591.5**	**822.5**	**160.6**	**233.4**	**823.7**	**1,147.4**
Total (excluding Berwick Bank) (Applicant's approach)	**70.1**	**88.5**	**442.4**	**589.2**	**156.3**	**224.5**	**668.8**	**902.2**

11.7.8.2 With a citation population of 43,200 breeding adults, 669.3 to 1,147.8 additional annual mortalities represents a 1.549 to 2.657 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 668.2 to 1,143.8 (Applicant's approach), there is a percentage point increase in mortality of 1.548 to 2.656. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.7.8.3 The PVA results are summarised in **Table 11-56**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-56 Summary of Population Viability Analysis results for annual collision impacts on gannet at the Forth Islands Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	824.2	43,200	150,518	186,038	147,487	0.9936	0.7926
	High	1,147.8	43,200	150,518	186,038	134,445	0.9910	0.7232
Excluding Berwick Bank	Low	669.3	43,200	150,518	186,038	153,945	0.9948	0.8281
	High	902.6	43,200	150,518	186,038	144,210	0.9929	0.7751
Applicant's approach								
Including Berwick Bank	Low	823.7	43,200	150,518	186,038	147,446	0.9936	0.7928
	High	1,147.4	43,200	150,518	186,038	134,547	0.9910	0.7233
Excluding Berwick Bank	Low	668.8	43,200	150,518	186,038	154,079	0.9948	0.8281
	High	902.2	43,200	150,518	186,038	144,314	0.9930	0.7754

11.7.8.4 The gannet population at the Forth Islands SPA has grown from its citation level of 43,200 to 150,518 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in **Section 11**. Under the SNCBs low approach, with Berwick Bank excluded, the PVA indicates the population will continue to grow. However, under all other scenarios, the population is modelled to decline slightly from its current level, although the model predicts that after 35 years, the population will still be well over its citation level. Furthermore, gannet at Forth Islands SPA are included in a without prejudice derogation case for Green Volt (Green Volt, 2023), (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (8.0-9.2 gannet from Green Volt, 162.9-254.4 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site.

11.7.8.5 The CGR ranges from 0.9910 to 0.9948, while the CPS ranges from 0.7233 to 0.8281. This level of impact is noticeable, although as the population is expected to remain well above its citation level, under and of the scenarios assessed it would not appear to have any potential to lead to an adverse effect on maintaining the gannet population as a feature of the Forth Islands SPA.

11.7.8.6 In addition, the combined assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.7.8.7 Given the high degree of precaution in the approach to assessment, and the fact that the population is expected to remain well above the citation level regardless of the assessment approach, it can therefore be concluded that the gannet population will be maintained as a feature of the Forth Islands SPA and there will be no adverse effect from the Salamander Project alone and in-combination.

11.7.9 Conclusion for the Forth Islands Special Protection Area in-combination

11.7.9.1 Under the application of the *de minimis* and precautionary consideration noted above, it can be concluded that there is, therefore, no potential for an AEOI with respect to kittiwake in view of the conservation objectives of the Forth Islands SPA from the Salamander Project in-combination with other plans or projects. The conclusion for puffin and gannet is of no AEOI in view of the conservation objectives of the Forth Islands SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.8 Ornithology In-combination Assessment for the Fowlsheugh Special Protection Area

11.8.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Fowlsheugh SPA are:

- Kittiwake (distributional response and collision); and
- Razorbill (distributional response).

11.8.2 Kittiwake (distributional response)

11.8.2.1 The distributional response mortality from other relevant projects is given in **Table 11-57**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-57 Kittiwake distributional response mortalities apportioned to the Fowlsheugh Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	3.7	20	2.4	26.1
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	11.1	59.8	7.2	78.1
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	39.8	n/a	39.8
Green Volt	Green Volt (2023)	Low	0	0.1	0	0.1

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Green Volt	Green Volt (2023)	High	0	0.2	0	0.2
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	0	0	0	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	0.7	9.6	0.4	10.7
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	2.2	28.6	1.3	32.1
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	19	n/a	19.0

11.8.2.2 The total in-combination mortalities is presented in **Table 11-58**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-58 Kittiwake distributional response mortalities apportioned to the Fowlsheugh Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	3.7	11.1	20.0	59.8	2.4	7.2	26.1	78.1

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Green Volt	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.2
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	0.7	2.2	9.6	28.6	0.4	1.3	10.7	32.1
Salamander	0.0	0.0	0.8	2.4	n/a	n/a	0.8	2.4
Total (including Berwick Bank)	**3.7**	**11.1**	**20.9**	**62.4**	**2.4**	**7.2**	**27.0**	**80.7**
Total (excluding Berwick Bank)	**3.0**	**8.9**	**11.3**	**33.8**	**2.0**	**5.9**	**16.3**	**48.6**

11.8.2.3 With a citation population of 73,300 breeding adults, 16.3 to 80.7 additional annual mortalities represents a 0.022 to 0.110 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.8.2.4 The PVA results are summarised in **Table 11-59**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-59 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the Fowlsheugh Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	27.0	73,300	28,078	26,635	25,606	0.9989	0.9602
	High	80.7	73,300	28,078	26,635	23,549	0.9966	0.8843
Excluding Berwick Bank	Low	16.3	73,300	28,078	26,635	26,003	0.9993	0.9757
	High	48.6	73,300	28,078	26,635	24,774	0.9980	0.9292

11.8.2.5 The kittiwake population of the Fowlsheugh SPA has declined between its citation in recent counts (Burnell *et al*., 2023), but is assessed as being in "Favourable Maintained" condition (although it should be noted the most recent condition assessment was made in 1999). The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.8.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.996 which indicates the population growth rate declines by less than 0.4%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8843 (with Berwick Bank; High approach to assessment) to 0.9757 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.8.3 Kittiwake (collision)

11.8.3.1 The collision mortality from other relevant projects is given in **Table 11-60**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-60 Kittiwake collision mortalities apportioned to the Fowlsheugh Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping	18.8	141.4	14.1	174.3
UK North Sea projects	SSE Renewables (2022a)	Developer	18.2	112.7	13.1	144.0
Green Volt	Green Volt (2023)		0.1	0.7	0.1	0.9
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	0.7	0.4	0.6	1.7
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	0.8	0.4	0.6	1.8
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	0.9	0.5	0.7	2.0

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	0.0	0.0	0.0	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping	3.4	92.6	2.3	98.3
Berwick Bank alone	SSE Renewables (2022a)	Developer	2.8	63.9	1.4	68.1

11.8.3.2 The total in-combination mortalities is presented in **Table 11-61**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-61 Kittiwake collision mortalities apportioned to the Fowlsheugh Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	18.2	18.8	112.7	141.4	13.1	14.1	144.0	174.3
Green Volt	0.1	0.1	0.7	0.7	0.1	0.1	0.9	0.9
West of Orkney	0.7	0.9	0.4	0.5	0.6	0.7	1.7	2.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	2.8	3.4	63.9	92.6	1.4	2.3	68.1	98.3
Salamander (SNCB approach)	0.0	0.0	1.7	1.7	0.0	0.0	1.7	1.7

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Salamander (Applicant's approach)	0.0	0.0	1.0	1.0	0.0	0.0	1.1	1.1
Total (including Berwick Bank) (SNCB approach)	**19.0**	**19.8**	**115.4**	**144.2**	**13.8**	**14.9**	**148.2**	**178.9**
Total (excluding Berwick Bank) (SNCB approach)	**16.2**	**16.4**	**51.5**	**51.6**	**12.4**	**12.6**	**80.1**	**80.6**
Total (including Berwick Bank) (Applicant's approach)	**19.0**	**19.8**	**114.8**	**143.6**	**13.8**	**14.9**	**147.6**	**178.3**
Total (excluding Berwick Bank) (Applicant's approach)	**16.2**	**16.4**	**50.9**	**51.0**	**12.4**	**12.6**	**79.5**	**80.0**

11.8.3.3 With a citation population of 73,300 breeding adults, 80.1 to 178.9 additional annual mortalities represents a 0.109 to 0.244 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 79.5 to 178.3 (Applicant's approach), there is a percentage point increase in mortality of 0.109 to 0.243 Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.8.3.4 The PVA results are summarised in **Table 11-62**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-62 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the Fowlsheugh Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	148.2	73,300	28,078	26,599	21,231	0.9938	0.7981
	High	178.9	73,300	28,078	26,599	20,284	0.9925	0.7618

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Excluding Berwick Bank	Low	80.1	73,300	28,078	26,599	23,618	0.9966	0.8856
	High	80.6	73,300	28,078	26,599	23,563	0.9966	0.8848
Applicant's approach								
Including Berwick Bank	Low	147.6	73,300	28,078	26,599	21,279	0.9938	0.7988
	High	178.3	73,300	28,078	26,599	20,272	0.9925	0.7625
Excluding Berwick Bank	Low	79.5	73,300	28,078	26,599	23,679	0.9967	0.8863
	High	80.0	73,300	28,078	26,599	23,563	0.9966	0.8862

11.8.3.5 The kittiwake population of the Fowlsheugh SPA has declined between its citation in recent counts (Burnell *et al.*, 2023), but is assessed as being in "Favourable Maintained" condition (although it should be noted the most recent condition assessment was made in 1999). The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.8.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.992 which indicates the population growth rate declines by less than 0.8%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.7618 (SNCB Approach; with Berwick Bank; High approach to assessment) to 0.8863 (Applicant's approach; without Berwick Bank; Low approach to assessment).

11.8.3.7 Whilst this level of impact is small, it is not negligible and in the context of a population that is already declining, the additional mortality from the Salamander Project in combination with other projects and plans would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. Further consideration is given in **Section 11.8.4** below.

11.8.4 Kittiwake (distributional response and collision)

11.8.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-58** and **Table 11-61**) is presented in **Table 11-63**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-63 Kittiwake combined distributional response and collision mortalities apportioned to the Fowlsheugh Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	21.9	29.9	132.7	201.2	15.5	21.3	170.1	252.4
Green Volt	0.1	0.1	0.8	0.9	0.1	0.1	1.0	1.1
West of Orkney	0.7	0.9	0.4	0.5	0.6	0.7	1.7	2.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	3.5	5.6	73.5	121.2	1.8	3.6	78.8	130.4
Salamander (SNCB approach)	0.0	0.0	2.4	4.0	0.0	0.0	2.5	4.1
Salamander (Applicant's approach)	0.0	0.0	1.8	1.8	0.0	0.0	1.9	1.9
Total (including Berwick Bank) (SNCB approach)	**22.7**	**30.9**	**136.3**	**206.6**	**16.2**	**22.1**	**175.2**	**259.6**
Total (excluding Berwick Bank) (SNCB approach)	**19.2**	**25.3**	**62.8**	**85.4**	**14.4**	**18.5**	**96.4**	**129.2**
Total (including Berwick Bank) (Applicant's approach)	**22.7**	**30.9**	**135.7**	**206.0**	**16.2**	**22.1**	**174.6**	**259.0**
Total (excluding Berwick Bank) (Applicant's approach)	**19.2**	**25.3**	**62.2**	**84.8**	**14.4**	**18.5**	**95.8**	**128.6**

11.8.4.2 With a citation population of 73,300 breeding adults, 96.4 to 259.6 additional annual mortalities represents a 0.132 to 0.354 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 95.8 to 259.0 (Applicant's approach), there is a percentage point increase in mortality of 0.131 to 0.353. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.8.4.3 The PVA results are summarised in **Table 11-64**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-64 Summary of Population Viability Analysis results for annual combined distributional response and collision impacts on kittiwake at the Fowlsheugh Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	175.2	73,300	28,078	26,599	20,388	0.9926	0.7660
	High	259.6	73,300	28,078	26,599	17,885	0.9891	0.6736
Excluding Berwick Bank	Low	96.4	73,300	28,078	26,599	23,047	0.9960	0.8641
	High	129.2	73,300	28,078	26,599	21,877	0.9946	0.8216
Applicant's approach								
Including Berwick Bank	Low	174.6	73,300	28,078	26,599	20,430	0.9927	0.7668
	High	259.0	73,300	28,078	26,599	17,912	0.9891	0.6739
Excluding Berwick Bank	Low	95.8	73,300	28,078	26,599	23,005	0.9960	0.8650
	High	128.6	73,300	28,078	26,599	21,890	0.9946	0.8226

11.8.4.4 The kittiwake population of the Fowlsheugh SPA has declined between its citation in recent counts (Burnell *et al*., 2023), but is assessed as being in "Favourable Maintained" condition (although it should be noted the most recent condition assessment was made in 1999). The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.8.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline under all impact scenarios considered.

11.8.4.6 Under the low approach, with or without Berwick Bank included, and under the high approach if Berwick Bank is excluded, the decline is only small, with a CGR greater than 0.992 and a CPS of 0.7660 to 0.8650. However, under the high approach and including Berwick Bank, the decline is more significant, with a CGR of 0.9891 and a CPS of 0.6736 (SNCB approach) or 0.6739 (Applicant's approach).

11.8.4.7 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 141.0 to 268.0 birds per annum. This would result in additional mortality of 0.410 – 0.437%. For a moderate prey year, which is a typical SeabORD metric to report, it was estimated that 185.7 birds per annum would face mortality. These estimates are in line with the estimates produced by the Applicant's approach (Berwick Bank was included in SeabORD runs), with SeabORD seen as more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. Therefore, the Applicant's approach is to rely on the results of the matrix approach for assessment. The SeabORD results provide additional confidence that the results of the matrix approach are both reasonable and precautionary.

11.8.4.8 Whichever scenario or approach is considered, in the context of a population that is already declining, the additional mortality from the Salamander Project in combination with other projects and plans would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. Further, kittiwake at Fowlsheugh SPA are included in a without prejudice derogation case for Green Volt (Green Volt, 2023) (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (1.0-1.1 kittiwake from Green Volt, 79.8-131.5 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site.

11.8.4.9 For context and on a without prejudice basis, the Salamander Project would contribute between just 1.9 individuals (under the Applicant's approach) and 2.5-4.1 individuals (the SNCB approach) to the in-combination total. The Applicant's approach falls within the range of the preferred NatureScot parameters for distributional response (see **Section 7.2.2**). Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.8.5 Razorbill (distributional response)

11.8.5.1 The distributional response mortality from other relevant projects is given in **Table 11-65**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-65 Razorbill distributional response mortalities apportioned to the Fowlsheugh Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A	3.0	48.8	3.9	1.6	55.7
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	9.0	81.4	11.6	4.8	102.0
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	2.5	13.7	3.2	1.3	19.4
Green Volt	Green Volt (2023)	SNCB Low	0.0	n/a	0.0	0.0	0.0
Green Volt	Green Volt (2023)	SNCB High	0.0	n/a	0.0	0.0	0.0
Green Volt	Green Volt (2023)	Developer	0.0	n/a	0.0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Low	0.0	0.0	0.0	n/a	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Mid	0.0	0.0	0.0	n/a	0.0
West of Orkney	Offshore Wind Power Limited (2023)	High	0.0	0.0	0.0	n/a	0.1
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of razorbill (and therefore cannot be applied in-combination).	n/a	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	0.5	11.5	0.6	0.1	12.6

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	1.6	19.2	1.9	0.3	22.7
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.4	3.3	0.5	0.0	4.2

11.8.5.2 The total in-combination mortalities is presented in **Table 11-66**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-66 Razorbill distributional response mortalities apportioned to the Fowlsheugh Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)									
	Spring / non-breeding		Breeding		Autumn		Winter		Annual total	
	Low	High	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	2.5	9.0	13.7	81.4	3.2	11.6	1.3	4.8	20.7	106.8
Green Volt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Berwick Bank alone	0.4	1.6	3.3	19.2	0.5	1.9	0.0	0.3	4.2	23.0
Salamander	0.0	0.1	0.4	2.4	n/a	n/a	n/a	n/a	0.4	2.5
Total (including Berwick Bank)	**2.5**	**9.1**	**14.1**	**83.8**	**3.2**	**11.6**	**1.3**	**4.8**	**21.1**	**109.4**
Total (excluding Berwick Bank)	**2.1**	**7.5**	**10.8**	**64.6**	**2.7**	**9.7**	**1.3**	**4.5**	**16.9**	**86.4**

11.8.5.3 With a citation population of 5,800 breeding adults, 16.9 to 109.4 additional annual mortalities represents a 0.292 to 1.885 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.8.5.4 The PVA results are summarised in **Table 11-67**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-67 Summary of Population Viability Analysis results for annual distributional response on razorbill at the Fowlsheugh Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (calculated from Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	21.1	5,800	18,844	6,831	6,503	0.9987	0.9541
	High	109.4	5,800	18,844	6,831	5,334	0.9932	0.7828
Excluding Berwick Bank	Low	16.9	5,800	18,844	6,831	6,565	0.9990	0.9633
	High	86.4	5,800	18,844	6,831	5,620	0.9946	0.8239

11.8.5.5 The razorbill population at the Fowlsheugh SPA has grown from its citation level of 5,800 to 18,844 based on recent count data (Burnell *et al.*, 2023) and is assessed as being in a “Favourable Maintained” condition.

11.8.5.6 Under the low approach, which presents the Applicant’s approach to the assessment, whether Berwick Bank is included or excluded, the magnitude of the impact, being 16.9 to 21.1 birds (to which the Salamander Project contributes just 0.4 individuals, and as outlined under **Section 11.2** a *de minimis* contribution) is small to negligible, with a CGR of 0.9987 to 0.9990 and a CPS of 0.9541 to 0.9633. This level of impact cannot be said to adversely affect the probability of razorbill being maintained as a feature of the Fowlsheugh SPA.

11.8.5.7 However without prejudice to the Applicant’s position, under the high approach (representing the upper end of the SNCBs parameters), whether Berwick Bank is included or excluded, the magnitude of the impact is more significant with a CGR of 0.9932 to 0.9546 and a CPS of 0.7828 to 0.8239. The PVA model predicts an overall population decline to below the citation level (albeit this result is contrary to the recent population growth). The high approach level of impact would be sufficient to be considered to have an adverse effect on maintaining the integrity of the population of razorbill at the Fowlsheugh SPA. However, it should be noted that the “high” approach to assessment is considered to be overly precautionary, as outlined in **Section 7.2.2**. It should also be noted that there is potential for the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, to significantly benefit razorbill populations (Scottish Government, 2023b)**Error! Bookmark not defined.**.

11.8.5.8 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6: Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 111.7 to 328.3 birds per annum. This would result in additional mortality of 0.593 – 1.742%. For a moderate prey year, which is a typical SeabORD metric to report, it was estimated that 202.7 birds per annum would face mortality These estimates are substantially higher than those estimated by the matrix approach.

11.8.5.9 SeabORD is seen as being more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. Therefore, the Applicant's approach is to rely on the results of the matrix approach for assessment.

11.8.5.10 Therefore, following the Applicant's low approach would be more consistent with the available evidence, and under that approach a conclusion of no adverse effect can be drawn.

11.8.6 Conclusion for the Fowlsheugh Special Protection Area in-combination

11.8.6.1 It can be concluded that there is, therefore, potential for an AEOI for kittiwake in view of the conservation objectives of the Fowlsheugh SPA from the Salamander Project in-combination with other plans or projects. For razorbill, under the Applicant's approach with or without Berwick, there is no potential for an AEOI in view of the conservation objectives of the Fowlsheugh SPA from the Salamander Project in-combination with other plans or projects.

11.8.6.2 However, without prejudice to the Applicant's position, under the high SNCB scenario both with and without Berwick Bank, there is potential for an AEOI for razorbill only in view of the conservation objectives of the Fowlsheugh SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.9 Ornithology In-combination Assessment for the Hermaness, Saxa Vord and Valla Field Special Protection Area

11.9.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Hermaness, Saxa Vord and Valla Field SPA are:

- Gannet (distributional response and collision).

11.9.2 Gannet (distributional response)

11.9.2.1 The distributional response mortality from other relevant projects is given in **Table 11-68**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-68 Gannet distributional response mortalities apportioned to the Hermaness, Saxa Vord and Valla Field Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	4.8	0.2	9.3	14.3
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	14.4	0.4	27.9	42.7
UK North Sea projects	SSE Renewables (2022a)	Developer	4.8	0.2	9.3	14.3
Green Volt	Green Volt (2023)	SNCB Low	0.1	0.0	0.0	0.1
Green Volt	Green Volt (2023)	SNCB High (high)	0.2	0.1	0.0	0.3
Green Volt	Green Volt (2023)	Developer Low (low)	0.1	0.0	0.0	0.1
Green Volt	Green Volt (2023)	Developer High	0.1	0	0.0	0.1
West of Orkney	Offshore Wind Power Limited (2023)	(Distributional response not available separately – only combined with collision)	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of gannet (and therefore cannot be applied in-combination).	0	0.04	0	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	0.1	0.2	0.5	0.8
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	0.3	0.4	1.6	2.3
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.1	0.2	0.5	0.8

11.9.2.2 The total in-combination mortalities is presented in **Table 11-69**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-69 Gannet distributional response mortalities apportioned to the Hermaness, Saxa Vord and Valla Field Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	4.8	14.4	0.2	0.4	9.3	27.9	14.3	42.7
Green Volt	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.3
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	0.1	0.3	0.2	0.4	0.5	1.6	0.8	2.3
Salamander	0.4	1.1	0.0	0.0	n/a	n/a	0.4	1.1
Total (including Berwick Bank)	**5.3**	**15.7**	**0.2**	**0.6**	**9.3**	**27.9**	**14.8**	**44.1**
Total (excluding Berwick Bank)	**5.2**	**15.4**	**0.0**	**0.2**	**8.8**	**26.3**	**14.0**	**41.8**

11.9.2.3 With a citation population of 32,800 breeding adults, 14.0 to 44.1 additional annual mortalities represents a 0.043 to 0.135 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.9.2.4 The PVA results are summarised in **Table 11-70**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-70 Summary of Population Viability Analysis results for annual distributional response impacts on gannet at the Hermaness, Saxa Vord and Valla Field Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	14.8	32,800	59,124	73,077	72,184	1.000	0.989
	High	44.1	32,800	59,124	73,077	70,837	0.999	0.969
Excluding Berwick Bank	Low	14.0	32,800	59,124	73,077	72,347	1.000	0.990
	High	41.8	32,800	59,124	73,077	70,956	0.999	0.970

11.9.2.5 The gannet population at the Hermaness, Saxa Vord and Valla Field SPA has grown from its citation level of 32,800 to 59,124 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in **Section 11**. The PVA results show that the gannet population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.999 which indicates the population growth rate declines by less than 0.1%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.969 (with Berwick Bank; High approach to assessment, the upper end of the SNCBs parameters) to 0.990 (without Berwick Bank; Low approach to assessment, the Applicant's parameters and the lower end of the SNCBs parameters). Overall, therefore, it is clear that the PVA results indicate that the impact levels modelled are negligible and would not adversely affect the gannet population at the Hermaness, Saxa Vord and Valla Field SPA.

11.9.3 Gannet (collision)

11.9.3.1 The collision mortality from other relevant projects is given in **Table 11-71**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-71 Gannet collision mortalities apportioned to the Hermaness, Saxa Vord and Valla Field Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	25.6	0.8	35.2	61.6
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	25.5	0.6	34.9	61.0

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring	Breeding	Autumn	Annual Total
Green Volt	Green Volt (2023)		0.4	0.6	0.0	1.0
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	3.3	0.0	1.8	5.1
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	3.3	0.0	2.6	5.9
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	4.5	0.0	3.3	7.8
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of gannet (and therefore cannot be applied in-combination).	0.0	0.1	0.0	0.1
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	0.1	0.8	0.9	1.8
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.1	0.6	0.6	1.3

11.9.3.2 The total in-combination mortalities is presented in **Table 11-72**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-72 Gannet collision mortalities apportioned to the Hermaness, Saxa Vord and Valla Field Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	25.5	25.6	0.6	0.8	34.9	35.2	61.0	61.6

Project(s)	Adult mortalities (individuals)							
	Spring		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Green Volt	0.4	0.4	0.6	0.6	0.0	0.0	1.0	1.0
West of Orkney	3.3	4.5	0.0	0.0	1.8	3.3	5.1	7.8
Pentland	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Berwick Bank alone	0.1	0.1	0.6	0.8	0.6	0.9	1.3	1.8
Salamander (SNCB approach)	0.1	0.1	0.0	0.0	0.2	0.2	0.4	0.4
Salamander (Applicant's approach)	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2
Total (including Berwick Bank) (SNCB approach)	**29.3**	**30.6**	**1.3**	**1.5**	**36.9**	**38.7**	**67.6**	**70.8**
Total (excluding Berwick Bank) (SNCB approach)	**29.2**	**30.5**	**0.7**	**0.7**	**36.3**	**37.8**	**66.3**	**69.0**
Total (including Berwick Bank) (Applicant's approach)	**29.3**	**30.6**	**1.3**	**1.5**	**36.8**	**38.6**	**67.4**	**70.7**
Total (excluding Berwick Bank) (Applicant's approach)	**29.2**	**30.5**	**0.7**	**0.7**	**36.2**	**37.7**	**66.1**	**68.9**

11.9.3.3 With a citation population of 32,800 breeding adults, 66.3 to 70.8 additional annual mortalities represents a 0.202 to 0.216 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 66.1 to 70.7 (Applicant's approach), there is a percentage point increase in mortality of 0.201 to 0.215. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.9.3.4 The PVA results are summarised in **Table 11-73**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**. .

Table 11-73 Summary of Population Viability Analysis results for annual collision impacts on gannet at the Hermaness, Saxa Vord and Valla Field Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	67.6	32,800	59,124	73,077	69,588	0.999	0.953
	High	70.8	32,800	59,124	73,077	69,563	0.999	0.951
Excluding Berwick Bank	Low	66.3	32,800	59,124	73,077	69,680	0.999	0.954
	High	69.0	32,800	59,124	73,077	69,577	0.999	0.952
Applicant's approach								
Including Berwick Bank	Low	67.4	32,800	59,124	73,077	69,569	0.999	0.953
	High	70.7	32,800	59,124	73,077	69,515	0.999	0.951
Excluding Berwick Bank	Low	66.1	32,800	59,124	73,077	69,699	0.999	0.954
	High	68.9	32,800	59,124	73,077	69,535	0.999	0.952

11.9.3.5 The gannet population at the Hermaness, Saxa Vord and Valla Field SPA has grown from its citation level of 32,800 to 59,124 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in Section 11. The PVA results show that the gannet population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.998 which indicates the population growth rate declines by less than 0.2%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.951 (with Berwick Bank; High approach to assessment, the upper end of the SNCBs parameters) to 0.954 (without Berwick Bank; Low approach to assessment, the Applicant's parameters). Overall, therefore, it is clear that the PVA results indicate that the impact levels modelled are negligible and would not adversely affect the gannet population at the Hermaness, Saxa Vord and Valla Field SPA.

11.9.4 Gannet (distributional response and collision)

11.9.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-69** and **Table 11-72**) is presented in **Table 11-74**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-74 Gannet combined distributional response and collision mortalities apportioned to the Hermaness, Saxa Vord and Valla Field Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	30.3	40.0	0.8	1.2	44.2	63.1	75.3	104.3
Green Volt	0.5	0.6	0.6	0.7	0.0	0.0	1.1	1.3
West of Orkney	3.3	4.5	0.0	0.0	1.8	3.3	5.1	7.8
Pentland	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Berwick Bank alone	0.2	0.4	0.8	1.2	1.1	2.5	2.1	4.1
Salamander (SNCB approach)	0.5	1.2	0.0	0.0	0.2	0.2	0.7	1.4
Salamander (Applicant's approach)	0.4	0.4	0.0	0.0	0.1	0.1	0.6	1.3
Total (including Berwick Bank) (SNCB approach)	**34.6**	**46.3**	**1.5**	**2.0**	**46.2**	**66.6**	**82.4**	**115.0**
Total (excluding Berwick Bank) (SNCB approach)	**34.4**	**45.9**	**0.7**	**0.8**	**45.1**	**64.1**	**80.3**	**110.9**
Total (including Berwick Bank) (Applicant's approach)	**34.5**	**46.2**	**1.5**	**2.1**	**46.1**	**66.6**	**82.2**	**114.8**
Total (excluding Berwick Bank) (Applicant's approach)	**34.3**	**45.8**	**0.7**	**0.9**	**45.0**	**64.1**	**80.1**	**110.7**

11.9.4.2 With a citation population of 32,800 breeding adults, 80.3 to 115.0 additional annual mortalities represents a 0.245 to 0.350 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 80.1 to 114.8 (Applicant's approach), there is a percentage point increase in mortality of 0.244 to 0.350. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.9.4.3 The PVA results are summarised in **Table 11-75**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-75 Summary of Population Viability Analysis results for annual combined distributional response and collision impacts on gannet at the Hermaness, Saxa Vord and Valla Field Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	82.4	32,800	59,124	73,077	68,899	0.998	0.943
	High	115.0	32,800	59,124	73,077	67,282	0.998	0.921
Excluding Berwick Bank	Low	80.3	32,800	59,124	73,077	68,916	0.998	0.944
	High	110.9	32,800	59,124	73,077	67,410	0.998	0.924
Applicant's approach								
Including Berwick Bank	Low	82.2	32,800	59,124	73,077	68,978	0.998	0.943
	High	114.8	32,800	59,124	73,077	67,321	0.998	0.921
Excluding Berwick Bank	Low	80.1	32,800	59,124	73,077	68,903	0.998	0.944
	High	110.7	32,800	59,124	73,077	67,514	0.998	0.924

11.9.4.4 The gannet population at the Hermaness, Saxa Vord and Valla Field SPA has grown from its citation level of 32,800 to 59,124 based on recent count data (Burnell *et al.*, 2023). The potential influence of HPAI is acknowledged in **Section 11**. The PVA results show that the gannet population is expected to continue growing, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, greater than 0.997 which indicates the population growth rate declines by less than 0.3%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.921 (with Berwick Bank; High approach to assessment, the upper end of the SNCBs parameters) to 0.944 (without Berwick Bank; Low approach to assessment, the Applicant's parameters). Overall, therefore, it is clear that the PVA results indicate that the impact levels modelled are negligible and would not adversely affect the gannet population at the Hermaness, Saxa Vord and Valla Field SPA under all of the scenarios assessed. It is noted that under the Applicants parameters, the Salamander Project contribution is 0.7 individuals per annum and therefore considered *de minimis* (**Section 11.2**).

11.9.4.5 Further, gannet at Hermaness, Saxa Vord and Valla Field SPA are included in a without prejudice derogation case for Green Volt (Green Volt, 2023) (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (0.5-0.9 gannet excluding Berwick Bank, 2.6-5.0 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site.

11.9.5 Conclusion for the Hermaness, Saxa Vord and Valla Field Special Protection Area in-combination

11.9.5.1 It can be concluded that there is, therefore, no potential for an AEOI for gannet in view of the conservation objectives of the Hermaness, Saxa Vord and Valla Field SPA either alone or in-combination with other plans or projects and therefore, subject to natural change, the gannet feature of the Hermaness, Saxa Vord and Valla Field SPA will be maintained in the long term. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.10 Ornithology In-combination Assessment for the North Caithness Cliffs Special Protection Area

11.10.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the North Caithness Cliffs SPA are:

- Kittiwake (distributional response and collision).

11.10.2 Kittiwake (distributional response)

11.10.2.1 The distributional response mortality from other relevant projects is given in **Table 11-76**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-76 Kittiwake distributional response mortalities apportioned to the North Caithness Cliffs Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	4.0	1.0	2.6	7.6
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	12	3.0	7.9	22.9
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	2.0	n/a	2.0
Green Volt	Green Volt (2023)	Low	0.0	0.0	0.0	0.0
Green Volt	Green Volt (2023)	High	0.0	0.0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	0.0	2.6	0.0	2.6
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	0.8	0.0	0.5	1.3
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	2.4	0.0	1.5	3.9
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	0.0	n/a	0.0

11.10.2.2 The total in-combination mortalities is presented in **Table 11-77.** The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-77 Kittiwake distributional response mortalities apportioned to the North Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	4.0	12.0	1.0	3.0	2.6	7.9	7.6	22.9
Green Volt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	2.6	2.6	0.0	0.0	2.6	2.6

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Berwick Bank alone	0.8	2.4	0.0	0.0	0.5	1.5	1.3	3.9
Salamander	0.0	0.0	0.1	0.2	n/a	n/a	0.1	0.3
Total (including Berwick Bank)	**4.0**	**12.0**	**3.7**	**5.8**	**2.6**	**7.9**	**10.3**	**25.8**
Total (excluding Berwick Bank)	**3.2**	**9.6**	**3.7**	**5.8**	**2.1**	**6.4**	**9.0**	**21.9**

11.10.2.3 With a citation population of 26,200 breeding adults, 9.0 to 25.8 additional annual mortalities represents a 0.034 to 0.098 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.10.2.4 The PVA results are summarised in **Table 11-78**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-78 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the North Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	10.3	26,200	11,142	10,551	10,197	0.9989	0.9626
	High	25.8	26,200	11,142	10,551	9,570	0.9973	0.9065
Excluding Berwick Bank	Low	9.0	26,200	11,142	10,551	10,233	0.9991	0.9664
	High	21.9	26,200	11,142	10,551	9,708	0.9977	0.9200

11.10.2.5 The kittiwake population of the North Caithness Cliffs SPA has declined between its citation in recent counts (Burnell *et al.*, 2023), and is assessed as being in “Unfavourable Declining” condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.10.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.997 which indicates the population growth rate declines by less than 0.3%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.9065 (with Berwick Bank; High approach to assessment) to 0.9664 (without Berwick Bank; Low approach to assessment). The contribution from Pentland (2.6 kittiwake) is potentially an overestimate based on the referenced resubmission (43% reduction in kittiwake numbers), however as the numbers are not apportioned to site a reduction in contribution to the in-combination totals here has not been included. Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is negligible, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.10.3 Kittiwake (collision)

11.10.3.1 The collision mortality from other relevant projects is given in **Table 11-79**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-79 Kittiwake collision mortalities apportioned to the North Caithness Cliffs Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	20.3	3.7	15.5	39.5
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	19.7	3.7	14.4	37.8
Green Volt	Green Volt (2023)		0.1	0.1	0.1	0.3
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	0.8	3.6	0.6	5.0
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	0.9	4.2	0.7	5.8
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	0.9	4.9	0.7	6.5

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	5.0	0.0	5.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	3.6	0.0	2.7	6.3
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	2.9	0.0	1.6	4.5

11.10.3.2 The total in-combination mortalities is presented in **Table 11-80**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-80 Kittiwake collision mortalities apportioned to the North Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	19.7	20.3	3.7	3.7	14.4	15.5	37.8	39.5
Green Volt	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3
West of Orkney	0.8	0.9	3.6	4.9	0.6	0.7	5.0	6.5
Pentland	n/a	n/a	5.0	5.0	0.0	0.0	5.0	5.0
Berwick Bank alone	2.9	3.6	0.0	0.0	1.6	2.7	4.5	6.3
Salamander (SNCB approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Salamander (Applicant's approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Total (including Berwick Bank) (SNCB approach)	**20.6**	**21.3**	**12.6**	**13.9**	**15.1**	**16.3**	**48.3**	**51.5**
Total (excluding Berwick Bank) (SNCB approach)	**17.7**	**17.7**	**12.6**	**13.9**	**13.5**	**13.6**	**43.8**	**45.2**
Total (including Berwick Bank) (Applicant's approach)	**20.6**	**21.3**	**12.5**	**13.8**	**15.1**	**16.3**	**48.2**	**51.4**
Total (excluding Berwick Bank) (Applicant's approach)	**17.7**	**17.7**	**12.5**	**13.8**	**13.5**	**13.6**	**43.7**	**45.1**

11.10.3.3 With a citation population of 26,200 breeding adults, 43.9 to 51.6 additional annual mortalities represents a 0.168 to 0.197 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 43.7 to 51.4 (Applicant's approach), there is a percentage point increase in mortality of 0.167 to 0.196. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.10.3.4 The PVA results are summarised in **Table 11-81**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-81 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the North Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	48.4	26,200	11,142	10,551	8,781	0.9949	0.8313
	High	51.5	26,200	11,142	10,551	8,654	0.9945	0.8211

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
Excluding Berwick Bank	Low	43.9	26,200	11,142	10,551	8,937	0.9953	0.8455
	High	45.2	26,200	11,142	10,551	8,872	0.9952	0.8411
Applicant's approach								
Including Berwick Bank	Low	48.2	26,200	11,142	10,551	8,770	0.9949	0.8317
	High	51.4	26,200	11,142	10,551	8,688	0.9946	0.8222
Excluding Berwick Bank	Low	43.7	26,200	11,142	10,551	8,937	0.9954	0.8464
	High	45.1	26,200	11,142	10,551	8,905	0.9952	0.8412

11.10.3.5 The kittiwake population of the North Caithness Cliffs SPA has declined between its citation in recent counts (Burnell *et al.*, 2023), and is assessed as being in "Unfavourable Declining" condition (NatureScot, ND). The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.10.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.994 which indicates the population growth rate declines by less than 0.6%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8211 (with Berwick Bank; High approach to assessment) to 0.8464 (without Berwick Bank; Low approach to assessment).

11.10.3.7 The contribution from Pentland (5.0 kittiwake) is potentially an overestimate based on the referenced resubmission (43% reduction in kittiwake numbers), however as the numbers are not apportioned to site, a reduction in contribution to the in-combination totals here has not been included. Further, kittiwake at North Caithness Cliffs SPA are included in a without prejudice derogation case for West of Orkney (West of Orkney, 2023) (as well as for Berwick Bank, SSE Renewables (2022a)), with potential for the contribution from those projects (5.0-6.5 kittiwake excluding Berwick Bank, 9.5-12.8 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and further reducing the level of impact at the site.

11.10.3.8 The project level impact, being at most 0.2 individuals, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any such in-combination effect. However, without prejudice to the Applicant's position, whilst the in-combination level of impact is small, in the context of a population that is already declining, would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. Further consideration is given below in **Section 11.10.4** for the combined distributional response and collision.

11.10.4 Kittiwake (distributional response and collision)

11.10.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-77** and **Table 11-80)** is presented in **Table 11-82**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-82 Kittiwake combined distributional response and collision mortalities apportioned to the North Caithness Cliffs Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	23.7	32.3	4.7	6.7	17.0	23.4	45.4	62.4
Green Volt	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3
West of Orkney	0.8	0.9	3.6	4.9	0.6	0.7	5.0	6.5
Pentland	0.0	0.0	7.6	7.6	0.0	0.0	7.6	7.6
Berwick Bank alone	3.7	6.0	0.0	0.0	2.1	4.2	5.8	10.2
Salamander (SNCB approach)	0.0	0.0	0.3	0.4	0.0	0.0	0.3	0.5
Salamander (Applicant's approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Total (including Berwick Bank) (SNCB approach)	**24.6**	**33.3**	**16.3**	**19.7**	**17.7**	**24.2**	**58.6**	**77.3**
Total (excluding Berwick Bank) (SNCB approach)	**20.9**	**27.3**	**16.3**	**19.7**	**15.6**	**20**	**52.8**	**67.1**
Total (including Berwick Bank) (Applicant's approach)	**24.6**	**33.3**	**16.2**	**19.5**	**17.7**	**24.2**	**58.5**	**77.0**
Total (excluding Berwick Bank) (Applicant's approach)	**20.9**	**27.3**	**16.2**	**19.5**	**15.6**	**20**	**52.7**	**66.8**

11.10.4.2 With a citation population of 26,200 breeding adults, 52.9 to 77.3 additional annual mortalities represents a 0.202 to 0.295 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 52.7 to 77.0 (Applicant's approach), there is a percentage point increase in mortality of 0.201 to 0.294. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.10.4.3 The PVA results are summarised in **Table 11-83**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-83 Summary of Population Viability Analysis results for combined annual collision and distributional response impacts on kittiwake at the North Caithness Cliffs Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	58.6	26,200	11,142	10,551	8,435	0.9938	0.7992
	High	77.3	26,200	11,142	10,551	7,866	0.9918	0.7440
Excluding Berwick Bank	Low	52.8	26,200	11,142	10,551	8,616	0.9944	0.8173
	High	67.1	26,200	11,142	10,551	8,166	0.9929	0.7736
Applicant's approach								
Including Berwick Bank	Low	58.5	26,200	11,142	10,551	8,442	0.9938	0.7994
	High	77.0	26,200	11,142	10,551	7,884	0.9918	0.7445
Excluding Berwick Bank	Low	52.7	26,200	11,142	10,551	8,622	0.9944	0.8176
	High	66.8	26,200	11,142	10,551	8,147	0.9929	0.7738

11.10.4.4 The kittiwake population of the North Caithness Cliffs SPA has declined between its citation in recent counts (Burnell *et al.*, 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations**Error! Bookmark not defined.**.

11.10.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline noticeably under all impact scenarios. The median CGR is, for all scenarios, greater than 0.991 which indicates the population growth rate declines by less than 1%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.7440 (with Berwick Bank; High approach to assessment) to 0.8176 (without Berwick Bank; Low approach to assessment).

11.10.4.6 The contribution from Pentland (7.6 kittiwake) is potentially an overestimate based on the referenced resubmission (43% reduction in kittiwake numbers), however as the numbers are not apportioned to site, a reduction in contribution to the in-combination totals here has not been included. Further, kittiwake at North Caithness Cliffs SPA are included in a without prejudice derogation case for West of Orkney (West of Orkney, 2023), with potential for the contribution from that project (5.0-6.5 kittiwake) to be compensated and therefore excluded from future in-combination totals and further reducing the level of impact at the site.

11.10.4.7 The project level impact, being at most 0.2 individuals per annum under the Applicant's approach (just 0.26-0.38% of the total) or 0.5 individuals per annum under the high SNCB approach (just 0.51-0.75% of the total), would, following the approach set out in **Section 11.2** be considered *de minimis* and would not make a measurable contribution to any such in-combination effect. However, without prejudice to the Applicant's position, whilst this level of impact is small, in the context of a population that is already declining, the mortality from the in combination values would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives, representing a population that is 18% to 26% smaller under the impacted scenarios than under the counterfactual scenario. For a population that is already in unfavourable condition and declining, this further decline is likely to be considered adverse. This conclusion applies to both consideration of the in-combination impact including or excluding Berwick Bank, and considering both the high and low approaches to assessment.

11.10.4.8 The Applicant's approach falls within the range of the preferred NatureScot parameters for distributional response (see **Section 7.2.2**). Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.10.5 Conclusion for the North Caithness Cliffs Special Protection Area in-combination

11.10.5.1 Following the approach to *de minimis* set out in **Section 11.2** and the precautionary consideration noted above, it can be concluded that there is, therefore, no potential for an AEOI for kittiwake in view of the conservation objectives of the North Caithness Cliffs SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.11 Ornithology In-combination Assessment for the St. Abb's Head to Fast Castle Special Protection Area

11.11.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the St. Abb's Head to Fast Castle SPA are:

- Kittiwake (distributional response and collision).

11.11.2 Kittiwake (distributional response)

11.11.2.1 The distributional response mortality from other relevant projects is given in **Table 11-84**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-84 Kittiwake distributional response mortalities apportioned to the St. Abb's Head to Fast Castle Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	1.4	32.2	0.9	34.5
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	4.1	96.2	2.7	103.0
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	64.0	n/a	64.0
Green Volt	Green Volt (2023)	Low	0.0	0.0	0.0	0.0
Green Volt	Green Volt (2023)	High	0.0	0.0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)		n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	0.3	29.1	0.2	29.6
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	0.9	87.0	0.5	88.4

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	57.8	n/a	57.8

11.11.2.2 The total in-combination mortalities is presented in **Table 11-85**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-85 Kittiwake distributional response mortalities apportioned to the St. Abb's Head to Fast Castle Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	1.4	4.1	32.2	96.2	0.9	2.7	34.5	103.0
Green Volt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	0.3	0.9	29.1	87.0	0.2	0.5	29.6	88.4
Salamander	0.0	0.0	0.1	0.2	n/a	n/a	0.1	0.3
Total (including Berwick Bank)	**1.4**	**4.1**	**32.3**	**96.4**	**0.9**	**2.7**	**34.6**	**103.3**
Total (excluding Berwick Bank)	**1.1**	**3.2**	**3.2**	**9.4**	**0.7**	**2.2**	**5.0**	**14.9**

11.11.2.3 With a citation population of 42,340 breeding adults, 5.0 to 103.3 additional annual mortalities represents a 0.012 to 0.244 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact (noting that for the low scenario excluding Berwick Bank, the PVA threshold has not been crossed and PVA was not required).

11.11.2.4 The PVA results are summarised in **Table 11-86**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-86 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the St. Abb's Head to Fast Castle Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al*., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	34.6	42,340	10,300	9,763	8,441	0.9960	0.8661
	High	103.3	42,340	10,300	9,763	6,353	0.9881	0.6509
Excluding Berwick Bank	Low	5.0	42,340	*Less than 0.02 percentage point increase in mortality – no PVA required and therefore AOEI*				
	High	14.9	42,340	10,300	9,763	9,183	0.9983	0.9397

11.11.2.5 The kittiwake population of the St Abb's Head to Fast Castle SPA has declined between its citation recent counts (Burnell *et al*., 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations(Scottish Government, 2023b).

11.11.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario.

11.11.2.7 If Berwick Bank is excluded from the results, then the impact from distributional response under the high scenario is negligible, with a CGR of 0.9983 and a CPS of 0.9397. No PVA is required under the low scenario if Berwick Bank is excluded. When Berwick Bank is excluded regardless of the assessment approach, the impact is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.11.2.8 However, if Berwick Bank is included, then a more noticeable decline in population is expected, with a CGR of 0.9960 to 0.9881 and a CPS of 0.6509 to 0.8661. The project level impact, being at most 0.3 individuals, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any such in-combination effect. Without prejudice to the Applicant's position, under the low approach with Berwick Bank included, the magnitude of the decline is small, but even so, in the context of a population that is already unfavourable and declining, it would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives. Under the high approach with Berwick Bank included, the in-combination impact is significant and would be considered an adverse effect. Further consideration is given below in **Section 11.11.4** for the combined distributional response and collision.

11.11.3 Kittiwake (collision)

11.11.3.1 The collision mortality from other relevant projects is given in **Table 11-87**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-87 Kittiwake collision mortalities apportioned to the St. Abb's Head to Fast Castle Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	6.9	287.3	5.2	299.4
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	6.7	200.3	4.8	211.8
Green Volt	Green Volt (2023)		0.0	0.1	0.0	0.1
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	0.0	0.0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	0.0	0.0	0.0	0.0
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	0.0	0.0	0.0	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	1.3	280.9	0.9	283.1
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	1.1	193.9	0.5	195.5

11.11.3.2 The total in-combination mortalities is presented in **Table 11-88**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-88 Kittiwake collision mortalities apportioned to the St. Abb's Head to Fast Castle Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	6.7	6.9	200.3	287.3	4.8	5.2	211.8	299.4
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	1.1	1.3	193.9	280.9	0.5	0.9	195.5	283.1
Salamander (SNCB approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Salamander (Applicant's approach)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Total (including Berwick Bank) (SNCB approach)	**6.7**	**6.9**	**200.6**	**287.6**	**4.8**	**5.2**	**212.1**	**299.7**
Total (excluding Berwick Bank) (SNCB approach)	**5.6**	**5.6**	**6.7**	**6.7**	**4.3**	**4.3**	**16.6**	**16.6**
Total (including Berwick Bank) (Applicant's approach)	**6.7**	**6.9**	**200.5**	**287.5**	**4.8**	**5.2**	**212**	**299.6**
Total (excluding Berwick Bank) (Applicant's approach)	**5.6**	**5.6**	**6.6**	**6.6**	**4.3**	**4.3**	**16.5**	**16.5**

11.11.3.3 With a citation population of 42,340 breeding adults, 16.6 to 299.7 additional annual mortalities represents a 0.039 to 0.708 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 16.5 to 299.6 (Applicant's approach), there is a percentage point increase in mortality of 0.039 to 0.707. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.11.3.4 The PVA results are summarised in **Table 11-89**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-89 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the St. Abb's Head to Fast Castle Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Unimpacted population after 35 years	Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	212.1	42,340	10,300	9,763	4,029	0.9756	0.4116
	High	299.7	42,340	10,300	9,763	2,769	0.9656	0.2836
Excluding Berwick Bank	Low	16.6	42,340	10,300	9,763	9,125	0.9981	0.9334
	High	16.6	42,340	10,300	9,763	9,106	0.9981	0.9332
Applicant's approach								
Including Berwick Bank	Low	212.0	42,340	10,300	9,763	4,009	0.9756	0.4115
	High	299.6	42,340	10,300	9,763	2,771	0.9656	0.2837
Excluding Berwick Bank	Low	16.5	42,340	10,300	9,763	9,131	0.9981	0.9344
	High	16.5	42,340	10,300	9,763	9,126	0.9981	0.9340

11.11.3.5 The kittiwake population of the St Abb's Head to Fast Castle SPA has declined between its citation recent counts (Burnell *et al*., 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.11.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario.

11.11.3.7 If Berwick Bank is excluded from the results, then the impact from distributional response is small to negligible, with a CGR of 0.9981 and a CPS of 0.9332 to 0.9334. Under that scenario, the impact is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.11.3.8 However, if Berwick Bank is included, then a more noticeable decline in population is expected, with a CGR of 0.9656 to 0.9756 and a CPS of 0.2837 to 0.4116. The project level impact, being at most 0.2 individuals, would, following the approach set out in **Section 11.2**, be considered *de minimis* and would not make a measurable contribution to any such in-combination effect. Without prejudice to the Applicant's position, when Berwick Bank is included in the in-combination totals this level of impact is significant and would be considered an adverse effect on the integrity of the population. Further consideration is given below in **Section 11.11.4** for the combined distributional response and collision.

11.11.4 Kittiwake (distributional response and collision)

11.11.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-85** and **Table 11-88**) is presented in **Table 11-90**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-90 Kittiwake combined distributional response and collision mortalities apportioned to the St. Abb's Head to Fast Castle Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	8.1	11.0	232.5	383.5	5.7	7.9	246.3	402.4
Green Volt	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	1.4	2.2	223.0	367.9	0.7	1.4	225.1	371.5
Salamander (SNCB approach)	0.0	0.0	0.2	0.4	0.0	0.0	0.3	0.4
Salamander (Applicant's approach)	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.2
Total (including Berwick Bank) (SNCB approach)	**8.1**	**11.0**	**232.9**	**384.0**	**5.7**	**7.9**	**246.7**	**403.0**
Total (excluding Berwick Bank) (SNCB approach)	**6.7**	**8.8**	**9.9**	**16.1**	**5.0**	**6.5**	**21.6**	**31.5**
Total (including Berwick Bank) (Applicant's approach)	**8.1**	**11**	**232.8**	**383.8**	**5.7**	**7.9**	**246.6**	**402.7**
Total (excluding Berwick Bank) (Applicant's approach)	**6.7**	**8.8**	**9.8**	**15.9**	**5**	**6.5**	**21.5**	**31.2**

11.11.4.2 With a citation population of 42,340 breeding adults, 21.6 to 403.0 additional annual mortalities represents a 0.051 to 0.952 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 21.5 to 402.7 (Applicant's approach), there is a percentage point increase in mortality of 0.051 to 0.951. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.11.4.3 The PVA results are summarised in **Table 11-91**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-91 Summary of Population Viability Analysis results for combined annual distributional response and collision impacts on kittiwake at the St. Abb's Head to Fast Castle Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	246.7	42,340	10,300	9,763	3,460	0.9717	0.3555
	High	403.0	42,340	10,300	9,763	1,767	0.9537	0.1815
Excluding Berwick Bank	Low	21.6	42,340	10,300	9,763	8,937	0.9975	0.9140
	High	31.5	42,340	10,300	9,763	8,552	0.9964	0.8777
Applicant's approach								
Including Berwick Bank	Low	246.6	42,340	10,300	9,763	3,467	0.9717	0.3551
	High	402.7	42,340	10,300	9,763	1,767	0.9537	0.1818
Excluding Berwick Bank	Low	21.5	42,340	10,300	9,763	8,945	0.9975	0.9145
	High	31.2	42,340	10,300	9,763	8,588	0.9964	0.8787

11.11.4.4 The kittiwake population of the St Abb's Head to Fast Castle SPA has declined between its citation recent counts (Burnell *et al.*, 2023), and is assessed as being in "Unfavourable Declining" condition. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.11.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario. The project level contribution to any in-combination effect is just 0.2 individuals per annum under the Applicant's approach (0.05-0.9 % with/without Berwick Bank) or at most 0.4 individuals per annum under the high SNCBs approach (0.1-1.3 % of the total with/without Berwick Bank). Such a contribution would, following the approach set out in **Section 11.2**, be considered *de minimis* and therefore would not make a measurable contribution to any such in-combination effect. However, without prejudice to the Applicant's position, the in-combination assessment is provided below.

11.11.4.6 If Berwick Bank is excluded from the results, then the impact from distributional response is small, with a CGR of 0.9964 to 0.9975 and a CPS of 0.8777 to 0.9145. Whilst small, in the context of a population that is already unfavourable and declining, this magnitude of impact would still appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives.

11.11.4.7 However, if Berwick Bank is included, then a more noticeable decline in population is expected, with a CGR of 0.9537 to 0.9717 and a CPS of 0.1818 to 0.3551. This level of impact is significant and would be considered an adverse effect.

11.11.4.8 The Applicant's approach falls within the range of the preferred NatureScot parameters for distributional response (see **Section 7.2.2**). Furthermore, the combined distributional response and collision assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary. In addition, Berwick Bank is pending determination of consent at the time of writing and the impact is therefore not confirmed (and, given the compensation plan that forms part of the Berwick Bank application has the potential to be removed from the in-combination totals once any such compensation is agreed).

11.11.5 Conclusion for the St Abb's Head to Fast Castle Special Protection Area in-combination

11.11.5.1 Following the approach to *de minimis* set out in **Section 11.2** and the precautionary consideration noted above, it can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives of the St. Abb's Head to Fast Castle SPA for kittiwake from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.12 Ornithology In-combination Assessment for the Sule Skerry and Sule Stack Special Protection Area

11.12.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Sule Skerry and Sule Stack SPA are:

- Puffin (distributional response).

11.12.2 Puffin (distributional response)

11.12.2.1 The distributional response mortality from other relevant projects is given in **Table 11-92.** It should be noted that Berwick Bank do not carry out an quantitative assessment of the impact to the puffin feature of the Sule Skerry and Sule Stack SPA and therefore there is no separate with/without Berwick Bank assessment. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-92 Puffin distributional response mortalities apportioned to the Sule Skerry and Sule Stack Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities		
			Breeding	Non-breeding	Annual
Moray West	Moray West (2018)	Site not screened in for assessment (the 2021 consent variation did not consider displacement and puffin, hence 2018 report referenced here)	n/a	n/a	n/a
Moray East	Moray Offshore Wind Farm (West) Limited (2012)	No puffin apportioned to the site	0.0	0.0	0.0
Beatrice	RPS (2012)	Site not screened in for puffin for assessment	n/a	n/a	n/a
Hywind	Statoil (2015)	Site not screened in for puffin for assessment	n/a	n/a	n/a
Kincardine	Kincardine Offshore Wind Farm Limited (2016)	Site not screened in for assessment	n/a	n/a	n/a
Aberdeen Bay Offshore Wind Farm	Marine Scotland (2013)	Site not assessed	n/a	n/a	n/a
Neart na Gaoithe	Marine Scotland (2018)	Site not assessed	n/a	n/a	n/a
Seagreen Alpha and Bravo	Marine Scotland (2019)	Site not assessed	n/a	n/a	n/a
Inch Cape	Inch Cape (2018)	Site not assessed	n/a	n/a	n/a
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in puffin numbers for the project to a total of 1 adult and 0.6 chicks (but not apportioned to sites and therefore cannot be applied in-combination).	2.0	0.0	2.0
Green Volt	Green Volt (2023)	SNCB Low	0.9	0.0	0.9
Green Volt	Green Volt (2023)	SNCB High (high)	1.4	0.0	1.4

Project(s)	Data source	Approach	Adult mortalities		
			Breeding	Non-breeding	Annual
Green Volt	Green Volt (2023)	Developer (low)	0.2	0.0	0.2
West of Orkney	Offshore Wind Power Limited (2023)	Low	63.8	0.0	63.8
West of Orkney	Offshore Wind Power Limited (2023)	Mid	85.1	0.0	85.1
West of Orkney	Offshore Wind Power Limited (2023)	High	104.4	0.0	104.4
Berwick Bank alone	SSE Renewables (2022a)	No LSE	n/a	n/a	n/s

11.12.2.2 The total in-combination mortalities is presented in **Table 11-93**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-93 Puffin distributional response mortalities apportioned to the Sule Skerry and Sule Stack Special Protection Area in-combination totals

Project(s)	Adult mortalities					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
UK North Sea	0.0	0.0	0.0	0.0	0.0	0.0
Green Volt	0.2	1.4	0.0	0.0	0.2	1.4
West of Orkney	63.8	104.4	0.0	0.0	63.8	104.4
Pentland	2.0	2.0	0.0	0.0	2.0	2.0
Berwick Bank	n/a	n/a	n/a	n/a	n/a	n/a
Salamander	0.3	1.6	n/a	n/a	0.3	1.6

Project(s)	Adult mortalities					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
Total	66.3	109.3	0.0	0.0	66.3	109.4

11.12.2.3 With a citation population of 93,800 breeding adults, 66.3 to 109.4 additional annual mortalities represents a 0.071 to 0.117 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.12.2.4 The PVA results are summarised in Table 11-94. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-94 Summary of Population Viability Analysis results for annual distributional response impacts on puffin at the Sule Skerry and Sule Stack Special Protection Area

Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median Unimpacted population after 35 years	Median Impacted population after 35 years	Median CGR	Median CPS
Low	66.3	93,800	95,484	36,743	35,681	0.9992	0.9713
High	109.6	93,800	95,484	36,743	34,933	0.9987	0.9529

11.12.2.5 The PVA results show that the population growth rate is 0.08% to 0.13% smaller than the counterfactual, leading to a population size that, after 35 years, is 2.87% to 4.71% smaller than the counterfactual population size. Overall, therefore, it is clear that the PVA results indicate that the impact levels modelled are negligible and would not adversely affect the puffin feature of the Sule Skerry and Sule Stack SPA under any scenario.

11.12.3 Conclusion for the Sule Skerry and Sule Stack Special Protection Area in-combination

11.12.3.1 It can be concluded that there is, therefore, no potential for an AEOI for puffin in view of the conservation objectives of the Sule Skerry and Sule Stack SPA either alone or in-combination with other plans or projects and therefore, subject to natural change, the puffin feature of the Sule Skerry and Sule Stack SPA will be maintained in the long term. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.13 Ornithology In-combination Assessment for the Troup, Pennan and Lion's Head Special Protection Area

11.13.1.1 As given in **Table 11-1**, the features that require in-combination assessment at the Forth Islands SPA are:

- Kittiwake (distributional response and collision);
- Guillemot (distributional response); and
- Razorbill (distributional response).

11.13.2 Kittiwake (distributional response)

11.13.2.1 The distributional response mortality from other relevant projects is given in **Table 11-95**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-95 Kittiwake distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A (low)	5.9	3.8	3.9	13.6
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	17.6	11.3	11.6	40.5
UK North Sea projects	SSE Renewables (2022a)	Developer	n/a	7.6	n/a	7.6
Green Volt	Green Volt (2023)	Low	0	0.1	0	0.1
Green Volt	Green Volt (2023)	High	0	0.2	0	0.2
West of Orkney	Offshore Wind Power Limited (2023)	Distributional response and collision not provided separately	n/a	n/a	n/a	0.0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	n/a	n/a	n/a	0.0

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
Berwick Bank alone	SSE Renewables (2022a)	Scoping A (low)	1.1	0.3	0.7	2.1
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	3.5	0.8	2.2	6.5
Berwick Bank alone	SSE Renewables (2022a)	Developer	n/a	0.5	n/a	0.5

11.13.2.2 The total in-combination mortalities is presented in **Table 11-96**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the single value required as per **Table 7-3** regardless of the low or high approach) and the SNCB values (the low and high columns, reflecting the different mortality rates required). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-96 Kittiwake distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	5.9	17.6	3.8	11.3	3.9	11.6	13.6	40.5
Green Volt	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.2
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	1.1	3.5	0.3	0.8	0.7	2.2	2.1	6.5
Salamander	0.0	0.1	1.3	3.8	n/a	n/a	1.3	3.8
Total (including Berwick Bank)	**5.9**	**17.7**	**5.2**	**15.3**	**3.9**	**11.6**	**15.0**	**44.5**

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
Total (excluding Berwick Bank)	**4.8**	**14.2**	**4.9**	**14.5**	**3.2**	**9.4**	**12.9**	**38.0**

11.13.2.3 With a citation population of 63,200 breeding adults, 12.9 to 44.5 additional annual mortalities represents a 0.020 to 0.070 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.13.2.4 The PVA results are summarised in **Table 11-97**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-97 Summary of Population Viability Analysis results for annual distributional response impacts on kittiwake at the Troup, Pennan and Lion's Head Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
Including Berwick Bank	Low	15.0	63,200	21,232	20,183	19,537	0.9991	0.9698
	High	44.5	63,200	21,232	20,183	18,354	0.9975	0.9136
Excluding Berwick Bank	Low	12.9	63,200	21,232	20,183	19,657	0.9993	0.9745
	High	38.0	63,200	21,232	20,183	18,654	0.9979	0.9265

11.13.2.5 The kittiwake feature of the Troup, Pennan and Lion's Head SPA is assessed as being in "Unfavourable No change" condition. The recent count data (Burnell *et al*., 2023) indicates the current population is smaller than the citation population. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.13.2.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.997 which indicates the population growth rate declines by less than 0.3%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.9136 (with Berwick Bank; High approach to assessment) to 0.9745 (without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of distributional response from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.13.3 Kittiwake (collision)

11.13.3.1 The collision mortality from other relevant projects is given in **Table 11-98**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-98 Kittiwake collision mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)			
			Spring / Non-breeding	Breeding	Autumn	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping (high)	29.9	9.4	22.7	62.0
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	28.9	8.5	21.1	58.5
Green Volt	Green Volt (2023)		0.1	0.9	0.2	1.2
West of Orkney	Offshore Wind Power Limited (2023)	Low (collision and distributional response combined)	1.2	0.5	0.9	2.6
West of Orkney	Offshore Wind Power Limited (2023)	Mid (collision and distributional response combined)	1.3	0.6	1.0	2.8
West of Orkney	Offshore Wind Power Limited (2023)	High (collision and distributional response combined)	1.4	0.6	1.1	3.1
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published and that includes a reduction in kittiwake numbers of 43% for the project (but not apportioned to sites and therefore cannot be applied in-combination).	0.0	0.0	0.0	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping (high)	5.3	2.7	3.9	11.9
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	4.3	1.9	2.3	8.5

11.13.3.2 The total in-combination mortalities is presented in **Table 11-99**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-99 Kittiwake collision mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	28.9	29.9	8.5	9.4	21.1	22.7	58.5	62.0
Green Volt	0.1	0.1	0.9	0.9	0.2	0.2	1.2	1.2
West of Orkney	1.2	1.4	0.5	0.6	0.9	1.1	2.6	3.1
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	4.3	5.3	1.9	2.7	2.3	3.9	8.5	11.9
Salamander (SNCB approach)	0.0	0.0	2.6	2.6	0.0	0.0	2.7	2.7
Salamander (Applicant's approach)	0.0	0.0	1.7	1.7	0.0	0.0	1.7	1.7
Total (including Berwick Bank) (SNCB approach)	**30.2**	**31.4**	**12.5**	**13.6**	**22.3**	**24.0**	**64.9**	**69.0**
Total (excluding Berwick Bank) (SNCB approach)	**25.9**	**26.1**	**10.6**	**10.9**	**20.0**	**20.1**	**56.4**	**57.1**
Total (including Berwick Bank) (Applicant's approach)	**30.2**	**31.4**	**11.6**	**12.6**	**22.2**	**24.0**	**64.0**	**68.0**
Total (excluding Berwick Bank) (Applicant's approach)	**25.9**	**26.1**	**9.7**	**9.9**	**19.9**	**20.1**	**55.5**	**56.1**

11.13.3.3 With a citation population of 63,200 breeding adults, 56.4 to 69.0 additional annual mortalities represents a 0.089 to 0.109 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 55.5 to 68.0 (Applicant's approach), there is a percentage point increase in mortality of 0.088 to 0.108. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.13.3.4 The PVA results are summarised in **Table 11-100**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA).**

Table 11-100 Summary of Population Viability Analysis results for annual collision impacts on kittiwake at the Troup, Pennan and Lion's Head Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	64.9	63,200	21,232	20,139	17,653	0.9964	0.8774
	High	69.0	63,200	21,232	20,139	17,494	0.9961	0.8703
Excluding Berwick Bank	Low	56.4	63,200	21,232	20,139	17,983	0.9969	0.8928
	High	57.1	63,200	21,232	20,139	17,923	0.9968	0.8914
Applicant's approach								
Including Berwick Bank	Low	64.0	63,200	21,232	20,139	17,750	0.9964	0.8795
	High	68.0	63,200	21,232	20,139	17,537	0.9962	0.8720
Excluding Berwick Bank	Low	55.5	63,200	21,232	20,139	18,037	0.9969	0.8940
	High	56.1	63,200	21,232	20,139	18,006	0.9969	0.8930

11.13.3.5 The kittiwake feature of the Troup, Pennan and Lion's Head SPA is assessed as being in "Unfavourable No change" condition. The recent count data (Burnell *et al*., 2023) indicates the current population is smaller than the citation population. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations (Scottish Government, 2023b).

11.13.3.6 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario and also under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.996 which indicates the population growth rate declines by less than 0.4%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.8703 (SNCB approach; with Berwick Bank; High approach to assessment) to 0.8940 (Applicant's approach; without Berwick Bank; Low approach to assessment). Overall, therefore, the impact of collision from the Salamander Project in combination with other projects is small, and is not of a magnitude that can be said to adversely affect the likelihood of the kittiwake population being maintained as a viable component of the site.

11.13.4 Kittiwake (distributional response and collision)

11.13.4.1 The combined additional mortality from distributional response (using a simple additive approach of the values in **Table 11-96** and **Table 11-99**) is presented in **Table 11-101**. The approach effectively sums the collision and distributional impacts, with potential for double counting inherent in that approach. Additional context on that risk is provided in **Section 7.2.8**. The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-101 Kittiwake combined distributional response and collision mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)							
	Spring / non-breeding		Breeding		Autumn		Annual total	
	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	34.8	47.5	12.3	20.7	25.0	34.3	72.1	102.5
Green Volt	0.1	0.1	1.0	1.1	0.2	0.2	1.3	1.4
West of Orkney	1.2	1.4	0.5	0.6	0.9	1.1	2.6	3.1
Pentland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berwick Bank alone	5.4	8.8	2.2	3.5	3.0	6.1	10.6	18.4
Salamander (SNCB approach)	0.0	0.1	3.9	6.4	0.0	0.0	3.9	6.5
Salamander (Applicant's approach)	0.0	0.0	2.9	2.9	0.0	0.0	3.0	3.0
Total (including Berwick Bank) (SNCB approach)	**36.1**	**49.0**	**17.7**	**28.9**	**26.2**	**35.6**	**79.9**	**113.5**
Total (excluding Berwick Bank) (SNCB approach)	**30.7**	**40.2**	**15.5**	**25.4**	**23.2**	**29.5**	**69.3**	**95.1**
Total (including Berwick Bank) (Applicant's approach)	**36.1**	**49.0**	**16.7**	**27.9**	**26.1**	**35.6**	**78.9**	**112.5**
Total (excluding Berwick Bank) (Applicant's approach)	**30.7**	**40.2**	**14.5**	**24.4**	**23.1**	**29.5**	**68.3**	**94.1**

11.13.4.2 With a citation population of 63,200 breeding adults, 69.3 to 113.5 additional annual mortalities represents a 0.110 to 0.180 percentage point increase in mortality rates when considering the SNCB approach. When considering additional mortality of 68.3 to 112.5 (Applicant's approach), there is a percentage point increase in mortality of 0.108 to 0.178. Therefore, PVA has been carried out for both scenarios (SNCB approach and Applicant's approach) to further assess the total in-combination impact.

11.13.4.3 The PVA results are summarised in **Table 11-102.** Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-102 Summary of Population Viability Analysis results for combined annual distributional response and collision impacts on kittiwake at the Troup, Pennan and Lion's Head Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR	Median CPS
SNCB approach								
Including Berwick Bank	Low	79.9	63,200	21,232	20,139	17,166	0.9955	0.8514
	High	113.5	63,200	21,232	20,139	16,063	0.9937	0.7960
Excluding Berwick Bank	Low	69.3	63,200	21,232	20,139	17,471	0.9961	0.8701
	High	95.1	63,200	21,232	20,139	16,662	0.9947	0.8256
Applicant's approach								
Including Berwick Bank	Low	78.9	63,200	21,232	20,139	17,176	0.9956	0.8531
	High	112.5	63,200	21,232	20,139	16,044	0.9937	0.7974
Excluding Berwick Bank	Low	68.3	63,200	21,232	20,139	17,531	0.9962	0.8716
	High	94.1	63,200	21,232	20,139	16,702	0.9948	0.8277

11.13.4.4 The kittiwake feature of the Troup, Pennan and Lion's Head SPA is assessed as being in "Unfavourable No change" condition. The recent count data (Burnell *et al.*, 2023) indicates the current population is smaller than the citation population. The intent and expectation of the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024, is to increase prey availability for species including seabirds, with lack of food a key concern with respect to such declines in seabird populations[Error! Bookmark not defined.].

11.13.4.5 The PVA results show that the kittiwake population is expected to remain relatively stable under the counterfactual (no impact) scenario but decline slightly under all impact scenarios considered. The median CGR is, for all scenarios, greater than 0.993 which indicates the population growth rate declines by less than

0.7%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.7960 (SNCB approach; with Berwick Bank; High approach to assessment) to 0.8716 (Applicant's approach; without Berwick Bank; Low approach to assessment).

11.13.4.6 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 16.7 to 79.7 birds per annum. This would result in additional mortality of 0.078 – 0.375%. For a moderate prey year, which is the typical SeabORD metric to report, it was estimated that 61.7 birds per annum would face mortality. These estimates are similar to the estimates produced by the Applicant's approach (Berwick Bank was included in SeabORD runs), with SeabORD seen as more biologically representative by the SNCBs. SeabORD however relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. The tools authors also state that there are modifications needed (Searle et al. 2022), which indicates that the tool cannot be solely relied upon due to its current state and hence should be used for contextual purposes only. However, the results nonetheless provide confidence that the results of the matrix approach are both reasonable and precautionary.

11.13.4.7 Whilst this level of population decline apparent across all assessment scenarios with and without Berwick Bank is small, it is not negligible and in the context of a population that is already declining, the additional mortality from the Salamander Project in combination with other projects and plans would appear to have the potential to adversely affect the likelihood of the site meeting its conservation objectives with regards to maintaining the kittiwake population as a viable component of the site. It should be noted that while this conclusion applied across all assessment scenarios, the contribution from the Salamander Project to the in-combination totals based on the Applicant's approach is just 3 individuals per year. The Applicant's approach applies the most recent avoidance rates from Ozsanlav-Harris *et al.* (2023), which utilized data from 16 different wind farm sites and is considered a robust resource for use in assessments.

11.13.4.8 It should be noted that the combined assessment is carried out by a simple additive approach of the distributional response mortalities and the collision mortalities. Assessing these two potential impacts together could amount to double counting, as birds that are subject to distributional response could not be subject to potential collision risk as they are already assumed to have not entered a wind farm. Equally, birds estimated to be subject to collision risk mortality would not be subjected to distributional response mortality as well (see **Section 7.9.8**). Therefore, this additive approach is considered highly precautionary.

11.13.5 Guillemot (distributional response)

11.13.5.1 The distributional response mortality from other relevant projects is given in **Table 11-103.** Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-103 Guillemot distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
UK North Sea projects	SSE Renewables (2022a)	Scoping A	14.5	7.8	22.3

Project(s)	Data source	Approach	Adult mortalities (individuals)		
			Breeding	Non-breeding	Annual
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	24.1	23.4	47.5
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	4	6.5	10.5
Green Volt	Green Volt (2023)	SNCB Low	5.4	0.9	6.3
Green Volt	Green Volt (2023)	SNCB High (high)	9.0	2.7	11.7
Green Volt	Green Volt (2023)	Developer (low)	1.5	0.8	2.3
West of Orkney	Offshore Wind Power Limited (2023)	Low	n/a	n/a	0
West of Orkney	Offshore Wind Power Limited (2023)	Mid	n/a	n/a	0
West of Orkney	Offshore Wind Power Limited (2023)	High	n/a	n/a	0
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of guillemot (and therefore cannot be applied in-combination).	n/a	n/a	0
Berwick Bank alone	SSE Renewables (2022a)	Scoping A	3.3	3.1	6.4
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	5.6	5.2	10.8
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.9	0.9	1.8

11.13.5.2 The total in-combination mortalities is presented in **Table 11-104**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-104 Guillemot distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)					
	Breeding		Non-breeding		Annual	
	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	4	24.1	6.5	23.4	10.5	47.5
Green Volt	1.5	9.0	0.8	2.7	2.3	11.7
West of Orkney	n/a	n/a	n/a	n/a	0	0
Pentland	n/a	n/a	n/a	n/a	0	0
Berwick Bank alone	0.9	5.6	0.9	5.2	1.80	10.80
Salamander	4.12	24.70	10.46	37.65	14.58	62.35
Total (including Berwick Bank)	9.62	57.80	17.76	63.75	27.38	121.55
Total (excluding Berwick Bank)	8.72	52.20	16.86	58.55	25.58	110.75

11.13.5.3 With a citation population of 44,600 breeding adults, 25.58 to 121.55 additional annual mortalities represents a 0.057 to 0.2873 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.13.5.4 The PVA results are summarised in **Table 11-105**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-105 Summary of Population Viability Analysis results for annual distributional response impacts on guillemot at the Troup, Pennan and Lion's Head Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR after 35 years	Median CPS after 35 years
Including Berwick Bank	Low	27.38	44,600	31,893	78,801	76,190	0.999	0.966
	High	121.55	44,600	31,893	78,801	67,631	0.996	0.858
	Low	25.58	44,600	31,893	78,801	76,380	0.999	0.968

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell et al., 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR after 35 years	Median CPS after 35 years
Excluding Berwick Bank	High	110.75	44,600	31,893	78,801	68,639	0.996	0.870

11.13.5.5 The guillemot population at the Troup, Pennan and Lion's Head SPA has declined from its citation level of 44,600 to 31,893 based on recent count data (Burnell *et al.*, 2023), and the guillemot feature is assessed as being in "Unfavourable Declining" condition (NatureScot, ND). However, the PVA results show that the guillemot population is expected to grow going forwards, under both high and low approaches and whether the impact from Berwick Bank is included or excluded. The median CGR is, for all scenarios, at least 0.996 which indicates the population growth rate declines by no more than 0.4%. After 35 years (the expected lifespan of the Salamander Project), the CPS ranges from 0.858 (with Berwick Bank; High approach to assessment) to 0.968 (without Berwick Bank; Low approach to assessment).

11.13.5.6 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 47.0 to 51.0 birds per annum. This would result in additional mortality of 0.146 – 0.234%. For a moderate prey year, which is a typical SeabORD output to report on, it was estimated that 47.0 birds per annum would face mortality.

11.13.5.7 These estimates are similar to those estimated by the matrix approach, especially towards the lower end of the range considered for the matrix approach. SeabORD is seen as being more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. With regards to larger population sizes, such as those of guillemot, the model cannot be run using 100% of colony populations and relies on only a subset of the population being simulated in the model (for example 20%). Outputs then are scaled to generate an estimate for 100% of the population. The model authors however state that results may not scale linearly, and therefore they may not produce the exact same values as running the full population in the simulation. This could lead to under or overestimations of mortalities and mortality rates. Therefore, the Applicant's approach is to rely on the results of the matrix approach for assessment. The SeabORD results provide additional confidence that the results of the matrix approach are both reasonable and precautionary.

11.13.5.8 For this site, the PVA results are broadly similar whether Berwick Bank is included or excluded, because the impact of Berwick Bank alone apportioned to this site is small and therefore the scenarios with and without Berwick Bank included are discussed together.

11.13.5.9 Under the low approach (the Applicant's parameters), the population growth rate is only 0.1% lower than the counterfactual growth rate, leading to a population size that is less than 4% smaller than the counterfactual population size after 35 years. This level of impact is negligible. Under the high approach, the upper end of the SNCBs parameters, the impact is slightly larger although still small, with a 0.4% reduction in growth rate compared to the counterfactual, leading to a population that is 13% to 14% smaller than the counterfactual population size after 35 years (but still larger than the current population and at citation). With the population expected to grow even under the high approach (especially with respect to the Sandeel (Prohibition of Fishing) (Scotland) Order 2024 and equivalent English provisions which came into force on 26 March 2024), the PVA results indicate that there is little prospect for the impact to adversely affect the site from achieving its conservation objectives. It should be further noted that the "high" approach to assessment is considered to be overly precautionary, as outlined in **Section 7.2.2**.

11.13.5.10 Therefore, it is concluded that there is no adverse effect to the guillemot feature of the Troup, Pennan and Lion's Head SPA.

11.13.6 Razorbill (distributional response)

11.13.6.1 The distributional response mortality from other relevant projects is given in **Table 11-106**. Where the parameters are applied to the low or high scenarios, this is highlighted in the table.

Table 11-106 Razorbill distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area from other relevant projects

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
UK North Sea projects	SSE Renewables (2022a)	Scoping A	1.5	1.8	1.9	0.8	5.2
UK North Sea projects	SSE Renewables (2022a)	Scoping B (high)	4.4	3.1	5.8	2.4	13.3
UK North Sea projects	SSE Renewables (2022a)	Developer (low)	1.2	0.5	1.6	0.6	3.3
Green Volt	Green Volt (2023)	SNCB Low	0.0	0.7	0.0	0.0	0.7
Green Volt	Green Volt (2023)	SNCB High (high)	0.0	1.2	0.0	0.0	1.2
Green Volt	Green Volt (2023)	Developer (low)	0.0	0.2	0.0	0.0	0.2
West of Orkney	Offshore Wind Power Limited (2023)	Low	0.0	0.0	0.0	n/a	0.0
West of Orkney	Offshore Wind Power Limited (2023)	Mid	0.0	0.0	0.0	n/a	0.0

Project(s)	Data source	Approach	Adult mortalities (individuals)				
			Spring / Non-breeding	Breeding	Autumn	Winter	Annual Total
West of Orkney	Offshore Wind Power Limited (2023)	High	0.0	0.0	0.0	n/a	0.1
Pentland	Xodus Group Ltd (2022)	Note that a subsequent update has been published but no mention of razorbill (and therefore cannot be applied in-combination).	n/a	n/a	n/a	n/a	0.0
Berwick Bank alone	SSE Renewables (2022a)	Scoping B	0.3	0.8	0.3	0.0	1.4
Berwick Bank alone	SSE Renewables (2022a)	Scoping B (high)	0.8	1.4	1.0	0.1	3.2
Berwick Bank alone	SSE Renewables (2022a)	Developer (low)	0.2	0.2	0.3	0.0	0.7

11.13.6.2 The total in-combination mortalities is presented in **Table 11-107**. The values for the Salamander Project include those applied for the Applicant's approach (from the 'low' columns reflecting the values required as per **Table 7-3**) and the upper end of the SNCB values (the high columns). The key values that form the basis of the assessment conclusions are highlighted by a red bold border.

Table 11-107 Razorbill distributional response mortalities apportioned to the Troup, Pennan and Lion's Head Special Protection Area in-combination totals

Project(s)	Adult mortalities (individuals)									
	Spring / non-breeding		Breeding		Autumn		Winter		Annual total	
	Low	High	Low	High	Low	High	Low	High	Low	High
UK North Sea projects (including Berwick Bank)	1.2	4.4	0.5	3.1	1.6	5.8	0.6	2.4	3.9	15.7
Green Volt	0.0	0.0	0.2	1.2	0.0	0.0	0.0	0.0	0.2	1.2
West of Orkney	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

Project(s)	Adult mortalities (individuals)									
	Spring / non-breeding		Breeding		Autumn		Winter		Annual total	
	Low	High	Low	High	Low	High	Low	High	Low	High
Pentland	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0	0.0
Berwick Bank alone	0.2	0.8	0.2	1.4	0.3	1.0	0.0	0.1	0.7	3.3
Salamander	0.0	0.0	0.3	1.6	n/a	n/a	n/a	n/a	0.3	1.6
Total (including Berwick Bank)	**1.2**	**4.4**	**1**	**5.9**	**1.6**	**5.8**	**0.6**	**2.4**	**4.4**	**18.6**
Total (excluding Berwick Bank)	**1**	**3.6**	**0.8**	**4.5**	**1.3**	**4.8**	**0.6**	**2.3**	**3.7**	**15.3**

11.13.6.3 With a citation population of 4,800 breeding adults, 3.7 to 18.6 additional annual mortalities represents a 0.077 to 0.387 percentage point increase in mortality rates. Therefore, PVA has been carried out to further assess the total in-combination impact.

11.13.6.4 The PVA results are summarised in **Table 11-108**. Full details are available in **Volume RP.A.2, Annex 2: Site Specific Population Viability Analysis (PVA)**.

Table 11-108 Summary of Population Viability Analysis results for annual distributional response impacts on razorbill at the Troup, Pennan and Lion's Head Special Protection Area

Scenario	Approach	Adult mortality	Citation Population	Recent Population (Burnell *et al.*, 2023)	Median unimpacted population after 35 years	Median impacted population after 35 years	Median CGR after 35 years	Median CPS after 35 years
Including Berwick Bank	Low	4.4	4,800	6,054	2,189	2,132	0.9991	0.9689
	High	18.6	4,800	6,054	2,189	1,926	0.9964	0.8782
Excluding Berwick Bank	Low	3.7	4,800	6,054	2,189	2,141	0.9993	0.9739
	High	15.3	4,800	6,054	2,189	1,972	0.9970	0.8985

11.13.6.5 The razorbill population at the Troup, Pennan and Lion's Head SPA has increased from its citation level of 4,800 to 6,054 based on recent count data (Burnell *et al.*, 2023), although the razorbill feature is assessed as being in "Unfavourable Declining" condition (NatureScot, ND).

11.13.6.6 Under the low approach to assessment, which presents the Applicant's approach to the assessment, (with or without Berwick Bank), the magnitude of impact, being 3.7 to 4.4 birds (to which the Salamander Project contributes just 0.3 individuals and therefore under the approach set out in **Section 11.2** is considered a *de minimis* contribution), is negligible, with a CGR of 0.9991 to 0.9993, while the CPS after 35 years is 0.9689 to 0.9739. Therefore, it is clear that the PVA results indicate that under the low approach, the impact levels modelled are negligible and would not adversely affect the razorbill feature of the Troup, Pennan and Lion's Head SPA.

11.13.6.7 Additional context on the distributional response is provided in **Volume ER.A.4, Annex 12.6 Displacement Assessment SeabORD**, for which the Salamander Project in combination with other projects would result in an estimated cumulative mortality of between 9.7 to 30.0 birds per annum. This would result in additional mortality of 0.160 – 0.496%. For a moderate prey year, which is a typical SeabORD output metric to report on, it was estimated that 30.0 birds per annum would face mortality. This estimate is higher than the upper end of the range considered using the matrix approach, although it should be noted that the range of mortality estimates does overlap considerably between the SeabORD and matrix-based results.

11.13.6.8 SeabORD is seen as being more biologically representative by the SNCBs. However, SeabORD relies on assumptions being made about certain parameters (e.g. prey distribution) which can bring into question the realism of the tool. Many of these parameter values are based on little or no real-world evidence but rather on simplifications, calibration or expert judgement. Additionally, only a certain number of colonies can be modelled, with this limitation resulting in inaccuracies in relation to assessing the competitive dynamics in areas affected by displacement. Since not all colonies can be effectively represented within the SeabORD framework, the tool may not capture the full spectrum of interactions among populations in the displaced regions. Consequently, the competition for resources in these areas may be inadequately measured, introducing uncertainties into the overall ecological assessment. Therefore, the Applicant's approach is to rely on the results of the matrix approach for assessment. The SeabORD results provide additional confidence that the results of the matrix approach are reasonable.

11.13.6.9 Under the high approach to assessment, representing the upper end of the SNCBs parameters (with or without Berwick Bank), the CGR is 0.9964 to 0.99670 while the CPS after 35 years is 0.8782 to 0.8985. This level of impact is small, and is not of a magnitude that can be said to adversely affect the likelihood of the razorbill population being maintained as a viable component of the site. Further, razorbill at Troup, Pennan and Lion's Head SPA are included in a without prejudice derogation case for Green Volt (Green Volt (2023), as well as for Berwick Bank (SSE Renewables, 2022), with potential for the contribution from those projects (0.2-1.2 razorbill excluding Berwick Bank, 0.9-4.4 including Berwick Bank) to be compensated and therefore excluded from future in-combination totals and reducing the level of impact at the site. It should be further noted that the "high" approach to assessment is considered to be overly precautionary, as outlined in **Section 7.2.2**.

11.13.6.10 Therefore, following the Applicant's low approach would be more consistent with the available evidence, and under that approach a conclusion of no adverse effect can be drawn. However, even considering the upper end of the SNCBs approach, the high approach, it can be concluded that there is no likely adverse effect on maintaining the razorbill feature of the Troup, Pennan and Lion's Head SPA.

11.13.7 Conclusion for the Troup, Pennan and Lion's Head Special Protection Area in-combination

11.13.7.1 It can be concluded that there is, therefore, potential for an AEOI for kittiwake in view of the conservation objectives of the Troup, Pennan and Lion's Head SPA from the Salamander Project in-combination with other plans or projects. However, for guillemot and razorbill the conclusion is of no AEOI in view of the conservation objectives of the Troup, Pennan and Lion's Head SPA from the Salamander Project in-combination with other plans or projects. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.14 Foraging Special Protection Areas

11.14.1.1 As these sites do not contain distinct breeding colonies, impacts cannot be apportioned to them in the same way as for SPAs designated due to breeding populations. However, if breeding populations of relevant (at both SPA colonies and non-SPA colonies) are maintained, then it would be expected that so too would the population of seabirds using the foraging SPAs be maintained.

11.14.2 Outer Firth of Forth & St Andrews Bay Complex Special Protection Area

11.14.2.1 The Outer Firth of Forth & St Andrews Bay Complex SPA was screened in for kittiwake and gannet (collision and distributional response) and puffin (distributional response). The assessment alone and in-combination for puffin and gannet has concluded no AEOI in all cases and therefore there is no potential for the Salamander Project to contribute to an AEOI on the puffin and gannet feature of the Outer Firth of Forth & St Andrews Bay Complex SPA.

11.14.2.2 With respect to kittiwake, the following SPAs are listed in the citation of the Outer Firth of Forth & St Andrews Bay Complex SPA, with a comment as regards the conclusion of impact in-combination from the Salamander Project (noting that of the following sites, a number fall under the '*de minimis*' category):

- Buchan Ness to Collieston Coast SPA (no AEOI alone, potential for AEOI in-combination);
- Forth Islands SPA (no AEOI alone, *de minimis* contribution in-combination);
- Fowlsheugh SPA (no AEOI alone, potential for AEOI in-combination);
- St Abb's Head to Fast Castle SPA (no AEOI alone, *de minimis* contribution in-combination); and
- Troup, Pennan and Lion's Head SPA (no AEOI alone, potential for AEOI in-combination).

11.14.2.3 It can be concluded that there is, therefore, potential for an AEOI in view of the conservation objectives of the Outer Firth of Forth & St Andrews Bay Complex SPA from the Salamander Project in-combination with other plans or projects in relation to kittiwake but no potential for an AEOI for puffin and gannet. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.14.3 Northumberland Marine Special Protection Area

11.14.3.1 The Northumberland Marine SPA was screened in for kittiwake (collision and distributional response) and puffin (distributional response). The assessment alone and in-combination for puffin has concluded no AEOI in all cases and therefore there is no potential for the Salamander Project to contribute to an AEOI on the puffin feature of the Outer Firth of Forth & St Andrews Bay Complex SPA.

11.14.3.2 With respect to kittiwake, the following SPAs are listed in the citation of the Northumberland Marine SPA, with a comment as regards the conclusion of impact in-combination from the Salamander Project:

- Lindisfarne SPA (not screened in and therefore no potential for AEOI);
- Northumbria Coast SPA (not screened in and therefore no potential for AEOI);

- Farne Islands SPA (kittiwake screened in for the Farne Islands, with the in-combination assessment concluding in **Section 11.6.4** no AEOI (noting that the high approach to assessment where Berwick Bank is included would result in risk of an AEOI); and
- Coquet Island SPA (the assessment alone concluded no AEOI for all pressures, with the level of affect alone insufficient to trigger the need for an in-combination assessment in **Table 7-63)**.

11.14.3.3 It can be concluded that there is, therefore, no potential for an AEOI in view of the conservation objectives of the Northumberland Marine SPA from the Salamander Project in-combination with other plans or projects in relation to kittiwake, and puffin. Further information is provided in **Section 11.15** to clarify the assessment scenarios (low vs high and with and without Berwick) that have the potential to result in an adverse effect.

11.15 Basis for the Conclusions for Ornithology In-combination

11.15.1.1 The assessment approach for offshore ornithology in-combination results in a number of potential conclusions for some sites and species, depending on the assessment parameters applied (the high and low scenarios, as defined in **Section 11**) and the inclusion or not of Berwick Bank (as requested by NatureScot in **Table 1-2**). For the Salamander Project, the conclusions presented above in **Sections 11.4.2** to **11.13.6** are based on the low scenario (the Applicant's approach) with consideration to Berwick Bank, with the high scenario presented for information. For clarity, all scenarios are summarised below to enable the reader to understand potential risk of AEOI under the different scenarios considered. Where a cell is shaded, that assessment approach has the potential to result in an AEOI.

11.15.1.2 It is of note that just prior to application (4th April 2024) the decision on the Pentland Floating Offshore Wind Farm application was published. That consented the project without a conclusion of no AEOI for all sites and species, but without information that could update how Pentland is included here in-combination. Of direct relevance to the Salamander Project is the Appropriate Assessment prepared by the Competent Authority (Marine Directorate and Scottish Government, 2024) which noted the following as part of the consideration of kittiwake of the North Caithness Cliffs SPA with respect to Berwick Bank "A determination has not yet been made on the applications for this project [Berwick Bank] however, the AA has concluded that it will have an adverse effect on the site integrity of a number of qualifying interests of SPAs including kittiwake of the North Caithness Cliffs SPA. Berwick Bank can therefore only be consented if a derogation case is agreed, including compensatory measures to offset its impacts on those species/sites where the AA cannot conclude that there will be no adverse effect on site integrity. This means that if Berwick Bank is consented, the effects from Berwick Bank on these species/sites will be compensated for and on this basis will not be considered in the in-combination assessment. Berwick Bank will be considered in the in-combination assessment for those species/sites where it has a likely significant effect but no adverse effect on site integrity". **Table 11-109** clearly identifies two SPAs where the potential for an AEOI for kittiwake would only result under the high SNCB scenario with Berwick Bank (East Caithness Cliffs SPA and Farne Islands SPA). SSE Renewables (2022b) identifies that based on its developer approach to assessment, an AEOI was concluded for East Caithness Cliffs SPA kittiwake and under its Scoping approach an AEOI would be concluded for kittiwake at Farne Islands SPA and the East Caithness Cliffs SPA and given the conclusion noted above in the AA for Pentland, it is not unreasonable to consider the same conclusion applying here thus removing those sites from AEOI risk for the Salamander Project.

Table 11-109 Summary of conclusions for ornithology in-combination and associated risk of an adverse effect on integrity (cells highlighted in green reflect where a *de minimis* case applies)

Site	Species	Current population (individuals)	Annual Adult Mortality from the Salamander Project		Conclusions of the Potential for an AEOI In-combination			
			Applicant's Approach	SNCB Approach	Applicant (Low) Scenario		SNCB (High) Scenario	
					Without Berwick Bank	With Berwick Bank	Without Berwick Bank	With Berwick Bank
Buchan Ness to Collieston Coast SPA	Kittiwake	22,590	9.0	11.9-19.7	AEOI	AEOI	AEOI	AEOI
	Herring gull	4,154	1.1	0.9	No AEOI	n/a	No AEOI	n/a
	Guillemot	39,440	26.6	64.8-128.6	No AEOI	No AEOI	No AEOI	No AEOI
East Caithness Cliffs SPA	Kittiwake	48,958	1.4	1.9-3.1	No AEOI	No AEOI	No AEOI	AEOI
	Razorbill	40,373	0.1	0.1-0.6	No AEOI	No AEOI	No AEOI	No AEOI
Farne Islands SPA	Kittiwake	8,804	0.1	0.2-0.3	No AEOI	No AEOI	No AEOI	No AEOI
	Puffin	87,504	0.4	2.5	No AEOI	No AEOI	No AEOI	No AEOI
Forth Islands SPA	Kittiwake	9,084	0.20	0.3-0.4	No AEOI	No AEOI	No AEOI	No AEOI
	Puffin	85,846	0.6	3.8	No AEOI	No AEOI	No AEOI	No AEOI
	Gannet	150,518	1.6	2.0-3.8	No AEOI	No AEOI	No AEOI	No AEOI
Fowlsheugh SPA	Kittiwake	28,078	1.9	2.5-4.1	AEOI	AEOI	AEOI	AEOI

Site	Species	Current population (individuals)	Annual Adult Mortality from the Salamander Project		Conclusions of the Potential for an AEOI In-combination			
			Applicant's Approach	SNCB Approach	Applicant (Low) Scenario		SNCB (High) Scenario	
					Without Berwick Bank	With Berwick Bank	Without Berwick Bank	With Berwick Bank
	Razorbill	18,844	0.4	1.5-2.5	No AEOI	No AEOI	AEOI	AEOI
Hermaness, Saxa Vord and Valla Field SPA	Gannet	59,124	0.6-1.3	0.7-1.4	No AEOI	No AEOI	No AEOI	No AEOI
North Caithness Cliffs SPA	Kittiwake	11,142	0.2	0.3-0.5	No AEOI	No AEOI	No AEOI	No AEOI
St Abb's Head to Fast Castle SPA	Kittiwake	10,300	0.2	0.3-0.4	No AEOI	No AEOI	No AEOI	No AEOI
Sule Skerry and Sule Stack SPA	Puffin	95,484	0.3	1.6	No AEOI	No AEOI	No AEOI	No AEOI
Troup Pennan and Lion's Head SPA	Kittiwake	21,232	3.0	3.9-6.5	AEOI	AEOI	AEOI	AEOI
	Guillemot	31,893	14.6	27.4-62.4	No AEOI	No AEOI	No AEOI	No AEOI
	Razorbill	6,054	0.3	0.948-1.598	No AEOI	No AEOI	No AEOI	No AEOI
Outer Firth of Forth & St Andrews Bay Complex SPA	Kittiwake	n/a	Potential for AEOI (driven by the conclusions on Buchan Ness to Collieston Coast SPA, Forth Islands SPA, Fowlsheugh SPA, St Abb's Head to Fast Castle SPA and Troup Pennan and Lion's Head SPA)					
	Puffin	n/a	No AEOI					
	Gannet	n/a	No AEOI					

Site	Species	Current population (individuals)	Annual Adult Mortality from the Salamander Project		Conclusions of the Potential for an AEOI In-combination			
			Applicant's Approach	SNCB Approach	Applicant (Low) Scenario		SNCB (High) Scenario	
					Without Berwick Bank	With Berwick Bank	Without Berwick Bank	With Berwick Bank
Northumberland Marine SPA	Kittiwake	n/a	No AEOI (driven by the conclusions on Farne Islands SPA and Coquet Island SPA)					
	Puffin	n/a	No AEOI					

12 Transboundary Assessment

12.1.1.1 Transboundary effects are defined as effects that extend into other European Economic Area (EEA) states. These may occur from the Project alone, or in-combination with other plans or projects. The Salamander Project area of influence is located exclusively within Scotland's Exclusive Economic Zone (EEZ), therefore no transboundary effects are expected from the Salamander Project.

12.1.1.2 The HRA Screening undertaken for the Salamander Project (SBES, 2023a) identified a number of SPAs outside the Scottish EEZ but none outside the UK EEZ. It is noted in consultation that agreement on the sites and species screened in (**Table 1-2**) was provided from Natural England and DAERA. All sites outside the Scottish EEZ have been identified through the same screening approach as those within the Scottish EEZ, with all sites and species assessed in the same manner regardless of location. Specifically, sites and features outside the Scottish EEZ assessed are:

- Coquet Island SPA (England) (no AEOI alone and in-combination);
- Farne Islands SPA (England) (no AEOI alone, no AEOI in-combination for puffin under any assessment scenario and no AEOI for kittiwake based on a *de minimis* case or when Berwick is excluded);
- Northumberland Marine SPA (England) (no AEOI alone and in-combination); and
- Rathlin Island SPA (Northern Ireland) (no AEOI alone and in-combination).

12.1.1.3 Conclusions for these sites are presented in **Table 13-1** and for the Farne Islands in particular in **Table 11-109**.

13 Summary of the Assessment

13.1.1.1 A summary of the assessment is outlined in **Table 13-1**, which concludes the Stage 4 and 5 Assessment for all sites and features identified through Stage 3 Screening **(Appendix A: Update to Stage 3 Screening for Assessment in Stages 4 and 5)**. Where the conclusion drawn is of AEOI following the Applicant's approach this is highlighted.

Table 13-1 Summary of the assessment

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Marine Mammals														
Moray Firth SAC	Bottlenose Dolphin	OAA	All phases	X	X	X							No AEOI	No AEOI
		Offshore ECC												
Offshore Ornithology														
Buchan Ness to Collieston Coast SPA	Guillemot	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
		OAA			X				X	X			No AEOI	No AEOI

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
	Herring Gull	Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	AEOI
		Offshore ECC							X					
	Shag	Offshore ECC	X				X	X	X				No AEOI	No AEOI
Calf of Eday SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
Cape Wrath SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Copinsay SPA	Guillemot	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Coquet Island SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
East Caithness Cliffs SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
	Razorbill	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Fair Isle SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Farne Islands SPA	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Fetlar SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
Flannan Isles SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
Forth Islands SPA	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	**Feature(s) Assessed**	**Project Aspect**	**Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.**										**Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)**	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Foula SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Fowlsheugh SPA	Guillemot	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Herring Gull	OAA			X				X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	AEOI
		Offshore ECC							X					
	Razorbill	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Handa SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
Hermaness, Saxa Vord and Valla Field SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
Hoy SPA	Guillemot	Offshore ECC	X				X	X	X				No AEOI	No AEOI
	Fulmar	OAA							X	X			No AEOI	No AEOI

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Loch of Strathbeg SPA and Ramsar	Sandwich Tern	OAA			X				X	X			No AEOI	No AEOI
		Offshore ECC							X					
Marwick Head SPA	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	**Feature(s) Assessed**	**Project Aspect**	**Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.**										**Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)**	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Migulay and Berneray SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
North Caithness Cliffs SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
	Razorbill	Offshore ECC	X				X	X	X				No AEOI	No AEOI
	Fulmar	OAA							X	X			No AEOI	No AEOI

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
North Rona and Sula Sgeir SPA		Offshore ECC							X					
	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
Northumberland Marine SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI

Designated Site	**Feature(s) Assessed**	**Project Aspect**	**Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.**										**Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)**	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
		Offshore ECC	X				X	X	X					
Noss SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	Offshore ECC	X				X	X	X				No AEOI	No AEOI
Outer Firth of Forth and St Andrews	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.									Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Bay Complex	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Rathlin Island SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
Ronas Hill - North Roe and Tingon Ramsar	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
Rousay SPA	Fulmar	OAA							X	X			No AEOI	No AEOI

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
St Abbs Head to Fast Castle SPA	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
St Kilda SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Gannet	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Sule Skerry and Sule Stack SPA	Puffin	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
Sumburgh Head SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
The Shiant Isles SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
Troup, Pennan and	Guillemot	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
Lion's Heads SPA	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Herring Gull	OAA			X				X	X			No AEOI	No AEOI
		Offshore ECC							X					
	Kittiwake	OAA			X		X		X	X			No AEOI	AEOI
		Offshore ECC							X					
	Razorbill	OAA	X	X			X	X	X	X			No AEOI	No AEOI
		Offshore ECC	X				X	X	X					
	Fulmar	OAA							X	X			No AEOI	No AEOI
		Offshore ECC							X					

Designated Site	Feature(s) Assessed	Project Aspect	Pressure Assessed - Potential for LSE? All pressures relate to C, O&M and D phases unless specified otherwise.										Potential for Adverse Effect Applicant's Approach? (Where reached on a *de minimis* basis shaded in turquoise otherwise in blue note AEOI)	
			Underwater Noise (C and D only)	*Entanglement (O&M only)*	*Collision (O&M only)*	*EMF (O&M only)*	*Physical Presence*	*Above Water Noise (C and D only)*	*Toxic Contamination*	*Light*	*Indirect Physical Impact*	*Suspended Sediment*	*Alone*	*In-Combination*
West Westray SPA	Kittiwake	OAA			X		X		X	X			No AEOI	No AEOI
		Offshore ECC							X					
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	Common Tern	Offshore ECC							X				No AEOI	No AEOI
	Eider	Offshore ECC							X		X	X	No AEOI	No AEOI
	Little Tern	Offshore ECC							X		X	X	No AEOI	No AEOI
	Sandwich Tern	Offshore ECC							X				No AEOI	No AEOI

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Appendix A Update to Stage 3 Screening for Assessment in Stages 4 and 5

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
Benthic Ecology							
No sites screened in for Annex I habitats						No	No LSE
Marine Mammals							
Berwickshire and North Northumberland Coast SAC	177 km (Landfall) 191 km (OAA)	Grey seal	OAA	C, O&M, D	Underwater noise Entanglement	Yes NatureScot recommends grey seal SACs outwith 20 km be screened out	No LSE
				O&M	Collision (with floating substructures) Entanglement		
			Offshore ECC	C, O&M, D	Underwater noise		
Faray and Holm of Faray SAC	193 km (Landfall) 196 km (OAA)	Grey seal	OAA	C, O&M, D	Underwater noise Entanglement	Yes NatureScot recommends grey seal SACs outwith 20 km be screened out	No LSE
				O&M	Collision (with floating substructures) Entanglement		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC	C, O&M, D	Underwater noise		
Dornoch Firth and Morrich More SAC	125 km (Landfall) 156 km (OAA)	Harbour seal	OAA	C, O&M, D	Underwater noise Entanglement	Yes NatureScot recommends harbour seal SACs outwith 50 km be screened out	No LSE
				O&M	Collision (with floating substructures) Entanglement		
			Offshore ECC	C, O&M, D	Underwater noise		
Sanday SAC	189 km (Landfall) 190 km (OAA)	Harbour seal	OAA	C, O&M, D	Underwater noise Entanglement	Yes NatureScot recommends harbour seal SACs outwith 50 km be screened out	No LSE
				O&M	Collision (with floating substructures) Entanglement		
			Offshore ECC	C, O&M, D	Underwater noise		
Isle of May SAC	155 km (Landfall)	Grey seal	OAA	C, O&M, D	Underwater noise	Yes	No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
	174 km (OAA)				Entanglement	NatureScot recommends grey seal SACs outwith 20 km be screened out	
				O&M	Collision (with floating substructures) Entanglement		
			Offshore ECC	C, O&M, D	Underwater noise		
Firth of Tay and Eden Estuary SAC	127 km (Landfall) 174 km (OAA)	Harbour seal	OAA	C, O&M, D	Underwater noise Entanglement	Yes NatureScot recommends harbour seal SACs outwith 50 km be screened out	No LSE
				O&M	Collision (with floating substructures) Entanglement		
			Offshore ECC	C, O&M, D	Underwater noise		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
Moray Firth SAC	89 km (Landfall) 120 km (OAA)	Bottlenose Dolphin	OAA	C, O&M, D	Underwater noise	NatureScot stated in their Screening response that bottlenose dolphin should be screened in for underwater noise from piling and UXO (no change required). The Scoping response also noted that EMF from dynamic cables should be included (among other comments that require no change here). EMF as an O&M pressure in the OAA has therefore been added here for consistency. Entanglement corrected to O&M only, as the pressure is absent in the construction and decommissioning phase.	Potential for LSE
				O&M	Collision (with floating substructures) Entanglement EMF		Potential for LSE
			Offshore ECC	C, O&M, D	Underwater noise		Potential for LSE
Migratory Fish and Freshwater Pearl Mussel							
River Dee SAC	46 km (Offshore ECC)	Atlantic salmon	Offshore ECC	O&M	EMF	The response from NatureScot to Screening made clear that the	No LSE
				C, O&M, D	Underwater noise		No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
	71 km (OAA)	FWPM			Toxic contamination, Suspended sediments	inability to understand connectivity between the Salamander Project and individual rivers means pressures offshore should be assessed in EIA only (and are therefore concluded as no LSE here).	No LSE
River Tweed SAC	204 km	Atlantic salmon	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Teith SAC	228 km	Atlantic salmon	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Tay SAC	147 km	Atlantic salmon	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
Rannoch Moor SAC	226 km	FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River South Esk SAC	126 km	Atlantic salmon FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Spey SAC	109 km	Sea lamprey	OAA	O&M	Physical presence, EMF, Entanglement		No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Atlantic salmon FWPM		C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Moriston SAC	206 km	Atlantic salmon FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Evelix SAC	169 km	FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
River Oykel SAC	185 km	Atlantic salmon FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
Berriedale and Langwell Waters SAC	169 km	Atlantic salmon	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Thurso SAC	153 km	Atlantic salmon	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
				O&M	EMF		No LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC	C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Naver SAC	189 km	Atlantic salmon FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
River Borgie SAC	201 km	Atlantic salmon FWPM	OAA	O&M	Physical presence, EMF, Entanglement		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
			Offshore ECC	O&M	EMF		No LSE
				C, O&M, D	Underwater noise, Toxic contamination, Suspended sediments		No LSE
Ornithology							
	OAA: 33 km	Guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
Buchan Ness to Collieston Coast SPA	Offshore ECC: 5 km				entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
		Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Shag	Offshore ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Screening checked in response to consultation comment (see Table 1-2) and a typo picked up (screened in within 6.4). Screening decision confirmed here.	Potential for LSE (breeding and non-breeding)
Calf of Eday SPA	OAA: 195 km Offshore ECC: 193 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Cape Wrath SPA	OAA: 233 km Offshore ECC: 211 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Copinsay SPA	OAA: 160 km Offshore ECC: 156 km	Guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
		Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Toxic contamination		(breeding and non-breeding)
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Coquet Island SPA	OAA: 250 km Offshore ECC: 244 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination	Note – typo corrected from Screening report which stated OAA not Offshore ECC	
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
					entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
East Caithness Cliffs SPA	OAA: 134 km Offshore ECC: 117 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Fair Isle SPA	OAA: 206 km Offshore ECC: 208 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
					entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Farne Islands SPA	OAA: 216 km Offshore ECC: 210 km	Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Fetlar SPA	OAA: 323 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
	Offshore ECC: 325 km		Offshore ECC		Toxic contamination		(breeding and non-breeding)
Flannan Isles SPA	OAA: 377 km Offshore ECC: 348 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Forth Islands SPA	OAA: 172 km Offshore ECC: 153 km	Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Foula SPA	OAA: 276 km Offshore ECC: 277 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Fowlsheugh SPA	OAA: 91 km	Guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
	Offshore ECC: 69 km				entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
		Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
					entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Handa SPA	OAA: 243 km Offshore ECC: 218 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Hermaness, Saxa Vord and Valla Field SPA	OAA: 343 km Offshore ECC: 344 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Hoy SPA	OAA: 171 km Offshore ECC: 160 km	Guillemot	Offshore ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Screening checked and a typo picked up (screened in within 6.4). Screening decision confirmed here, Offshore ECC only.	Potential for LSE (breeding and non-breeding)
		Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects),	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
					entanglement, underwater noise, above water noise, toxic contamination, light		(breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Loch of Strathbeg SPA and Ramsar	OAA: 35 km Offshore ECC: 8 km	Sandwich tern	OAA	C, O&M and D	Collision, toxic contamination, light	Screening checked in response to consultation comment (see Table 1-2) and a typo picked up (screened in within 6.4). Screening decision confirmed here.	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Marwick Head	OAA: 203 km Offshore ECC: 195 km	Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Mingulay and Berneray SPA	OAA: 391 km Offshore ECC: 357 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
North Caithness Cliffs SPA	OAA: 147 km Offshore ECC: 135 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
		Razorbill	Offshore ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	No. Screened in for Offshore ECC only.	Potential for LSE (breeding and non-breeding)

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
North Rona and Sula Sgeir SPA	OAA: 310 km Offshore ECC: 290 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Northumberland Marine SPA	OAA: 209 km Offshore ECC: 199 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	Addition post screening for completeness	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light		
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light		
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Noss SPA	OAA: 275 km Offshore ECC: 277 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Toxic contamination		(breeding and non-breeding)
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	Offshore ECC	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination	Yes – checks during assessment confirmed the OAA is outwith the foraging range for puffin (distance to SPA is 275 km and foraging range is 265.4 km) therefore screened in for the Offshore ECC only	Potential for LSE (breeding and non-breeding)
Outer Firth of Forth and St Andrews Bay Complex	OAA: 139 km Offshore ECC: 116 km	Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Addition post screening for completeness	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light		
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light		
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Rathlin Island SPA	OAA: 395 km Offshore ECC: 364 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Ronas Hill – North Roe and Tingon Ramsar	OAA: 319 km Offshore ECC: 321 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
Rousay SPA	OAA: 197 km Offshore ECC: 192 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
St Abb`s Head to Fast Castle SPA	OAA: 192 km Offshore ECC: 177 km	Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
St Kilda SPA	OAA: 427 km Offshore ECC: 396 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
Sule Skerry and Sule Stack SPA	OAA: 242 km Offshore ECC: 226 km	Gannet	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	Added post consultation (see **Table 1-2**)	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Puffin	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
Sumburgh Head SPA	OAA: 244 km Offshore ECC: 245 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Toxic contamination		(breeding and non-breeding)
The Shiant Isles SPA	OAA: 300 km Offshore ECC: 270 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
Troup, Pennan and Lion`s Heads SPA	OAA: 54 km Offshore ECC: 26 km	Guillemot	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
		Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Herring gull	OAA	C, O&M and D	Collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Razorbill	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), entanglement, underwater noise, above water noise, toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Physical Presence (visual disturbance/ displacement and barrier effects), underwater noise, above water noise, toxic contamination		
West Westray SPA	OAA: 207 km Offshore ECC: 203 km	Fulmar	OAA	C, O&M and D	Toxic contamination, light	No	Potential for LSE (breeding and non-breeding)
			Offshore ECC		Toxic contamination		
		Kittiwake	OAA	C, O&M and D	Physical Presence (visual disturbance/ displacement and barrier effects), collision, toxic contamination, light	No	Potential for LSE

Protected Site	Distance from Development Area	Feature(s)	Project Aspect	Project Phase	Pressure(s)	Change from Screening Report?	Determination of LSE
			Offshore ECC		Toxic contamination		(breeding and non-breeding)
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	OAA: 41 km Offshore ECC: 13 km	Common tern	Offshore ECC	C, O&M and D	Toxic contamination	No	Potential for LSE (breeding and non-breeding)
		Eider	Offshore ECC	C, O&M and D	Indirect physical impact (to habitat), toxic contamination, suspended sediments	No	Potential for LSE (breeding and non-breeding)
		Little tern	Offshore ECC	C, O&M and D	Indirect physical impact (to habitat), toxic contamination, suspended sediments	No	Potential for LSE (breeding and non-breeding)
		Sandwich tern	Offshore ECC	C, O&M and D	Toxic contamination	Screening checked in response to consultation comment (see Table 1-2) and a typo picked up (screened in within 6.4). Screening decision confirmed here.	Potential for LSE (breeding and non-breeding)

Appendix B Information on the Designated Sites Screened in

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Marine Mammals							
Moray Firth SAC	UK0019808	SCO	Bottlenose dolphin	*Tursiops truncatus*	Favourable Maintained (21/09/2016)	None available	https://apps.snh.gov.uk/sitelink-api/v1/sites/8327/documents/59
Ornithology							
Buchan Ness to Collieston Coast SPA	UK9002491	SCO	Guillemot	*Uria aalge*	Favourable Maintained (16/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8473/documents/29	None available
Buchan Ness to Collieston Coast SPA	UK9002491	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining (16/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8473/documents/29	None available
Buchan Ness to Collieston Coast SPA	UK9002491	SCO	Herring gull	*Larus argentatus*	Unfavourable No change (16/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8473/documents/29	None available
Buchan Ness to Collieston Coast SPA	UK9002491	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable No change (16/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8473/documents/29	None available

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Buchan Ness to Collieston Coast SPA	UK9002491	SCO	Shag	*Phalacrocorax aristotelis*	Unfavourable No change (16/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8473/documents/29	None available
Calf of Eday SPA	UK9002431	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained (08/06/2016)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8478/documents/29	None available
Calf of Eday SPA	UK9002431	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining (08/06/2016)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8478/documents/29	None available
Cape Wrath SPA	UK9001231	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining (04/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8481/documents/29	None available
Cape Wrath SPA	UK9001231	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining (04/06/2017)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8481/documents/29	None available
Cape Wrath SPA	UK9001231	SCO	Puffin	*Fratercula arctica*	Unfavourable No change (05/07/2018)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8481/documents/29	None available

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Copinsay SPA	UK9002151	SCO	Guillemot	*Uria aalge*	Unfavourable No change (11/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8485/documents/29	None available
Copinsay SPA	UK9002151	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained (11/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8485/documents/29	None available
Copinsay SPA	UK9002151	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining (11/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8485/documents/29	None available
Coquet Island SPA	UK9006031	ENG	Fulmar (Seabird assemblage)	*Fulmarus glacialis*	None available	https://publications.naturalengland.org.uk/file/5254489456246784	https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006031&SiteName=Coquet%20Island&SiteNameDisplay=Coquet%20Island%20SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4#mmo
Coquet Island SPA	UK9006031	ENG	Black legged kittiwake (Seabird assemblage)	*Rissa tridactyla*	None available	https://publications.naturalengland.org.uk/file/5254489456246784	https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006031&SiteName=Coquet%20Island&SiteNameDisplay=Coquet%20Island%20SPA&countyCode=&responsiblePerson=&SeaArea

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
							= &IFCAArea=&NumMarineSeasonality=4#mmo
Coquet Island SPA	UK9006031	ENG	Puffin (Seabird assemblage)	*Fratercula arctica*	None available	https://publications.naturalengland.org.uk/file/5254489456246784	https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006031&SiteName=Coquet%20Island&SiteNameDisplay=Coquet%20Island%20SPA&countyCode=&responsiblePerson=&SeaArea= &IFCAArea=&NumMarineSeasonality=4#mmo
East Caithness Cliffs SPA	UK9001182	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained (30/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8492/documents/29	None available
East Caithness Cliffs SPA	UK9001182	SCO	Black legged kittiwake	*Rissa tridactyla*	Favourable Maintained (15/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8492/documents/29	None available
East Caithness Cliffs SPA	UK9001182	SCO	Razorbill	*Alca torda*	Favourable Maintained (30/06/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8492/documents/29	None available

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Fair Isle SPA	UK9002091	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained (01/06/2016)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8496/documents/29	None available
Fair Isle SPA	UK9002091	SCO	Gannet	*Morus bassanus*	Favourable Maintained (01/06/2014)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8496/documents/29	None available
Fair Isle SPA	UK9002091	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining (01/06/2016)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8496/documents/29	None available
Fair Isle SPA	UK9002091	SCO	Puffin	*Fratercula arctica*	Unfavourable Declining (01/04/2015)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8496/documents/29	None available
Farne Islands SPA	UK9006021	ENG	Black legged kittiwake	*Rissa tridactyla*	None available	https://publications.naturalengland.org.uk/file/6464920761925632	https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006021&SiteName=Farne&SiteNameDisplay=Farne%20Islands%20SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=5&HasCA=1

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Farne Islands SPA	UK9006021	ENG	Puffin	*Fratercula arctica*	None available	https://publications.naturalengland.org.uk/file/6464920761925632	https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006021&SiteName=Farne&SiteNameDisplay=Farne%20Islands%20SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=5&HasCA=1
Fetlar SPA	UK9002031	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining (26/06/2016)	https://apps.snh.gov.uk/sitelink-api/v1/sites/8498/documents/29	None available
Flannan Isles SPA	UK9001021	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Recovering	https://apps.snh.gov.uk/sitelink-api/v1/sites/8502/documents/29	None available
Forth Islands SPA	UK9004171	SCO	Gannet	*Morus bassanus*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8500/documents/29	None available
Forth Islands SPA	UK9004171	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8500/documents/29	None available
Forth Islands SPA	UK9004171	SCO	Puffin	*Fratercula arctica*	Favourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8500/documents/29	None available
Foula SPA	UK9002061	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8504/documents/67	None available

Site Name	Site Code	Nation	Feature and feature code (common name where relevant)	Feature (latin name where relevant)	Status/ Condition	Conservation objectives	Management Plan and/or Supplementary Advice
Foula SPA	UK9002061	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8504/documents/67	None available
Foula SPA	UK9002061	SCO	Puffin	*Fratercula arctica*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8504/documents/67	None available
Fowlsheugh SPA	UK9002271	SCO	Guillemot	*Uria aalge*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8505/documents/29	None available
Fowlsheugh SPA	UK9002271	SCO	Fulmar	*Fulmarus glacialis*	Favourable maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8505/documents/29	None available
Fowlsheugh SPA	UK9002271	SCO	Herring gull	*Larus argentatus*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8505/documents/29	None available
Fowlsheugh SPA	UK9002271	SCO	Black legged kittiwake	*Rissa tridactyla*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8505/documents/29	None available
Fowlsheugh SPA	UK9002271	SCO	Razorbill	*Alca torda*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8505/documents/29	None available
Handa SPA	UK9001241	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8511/documents/29	None available

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Handa SPA	UK9001241	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8511/documents/29	None available
Hermaness, Saxa Vord and Valla Field SPA	UK9002011	SCO	Fulmar	*Fulmarus glacialis*	Favourable Recovered	https://apps.snh.gov.uk/sitelink-api/v1/sites/8512/documents/29	None available
Hermaness, Saxa Vord and Valla Field SPA	UK9002011	SCO	Gannet	*Morus bassanus*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8512/documents/29	None available
Hoy SPA	UK9002141	SCO	Guillemot	*Uria aalge*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8513/documents/29	None available
Hoy SPA	UK9002141	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8513/documents/29	None available
Hoy SPA	UK9002141	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8513/documents/29	None available
Hoy SPA	UK9002141	SCO	Puffin	*Fratercula arctica*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8513/documents/29	None available
Loch of Strathbeg SPA	UK9002211	SCO	Sandwich tern	*Sterna sandvicensis*	Unfavourable no change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8537/documents/29	None available

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Loch of Strathbeg Ramsar	UK13041	SCO	Sandwich tern	*Sterna sandvicensis*	Not assessed	None available	None available
Marwick Head SPA	UK9002121	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8544/documents/29	None available
Mingulay and Berneray SPA	UK9001121	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8545/documents/29	None available
North Caithness Cliffs SPA	UK9001181	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8554/documents/29	None available
North Caithness Cliffs SPA	UK9001181	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8554/documents/29	None available
North Caithness Cliffs SPA	UK9001181	SCO	Puffin	*Fratercula arctica*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8554/documents/29	None available
North Caithness Cliffs SPA	UK9001181	SCO	Razorbill	*Alca torda*	Favourable Recovered	https://apps.snh.gov.uk/sitelink-api/v1/sites/8554/documents/29	None available
North Rona and Sula Sgeir SPA	UK9001011	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8558/documents/29	None available

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North Rona and Sula Sgeir SPA	UK9001011	SCO	Gannet	*Morus bassanus*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8558/documents/29	None available
North Rona and Sula Sgeir SPA	UK9001011	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8558/documents/29	None available
Northumberland Marine SPA	UK9020325	ENG	Fulmar	*Fulmarus glacialis*	Not assessed	https://publications.naturalengland.org.uk/file/4718490422607872	https://publications.naturalengland.org.uk/publication/5340976100933632
Northumberland Marine SPA	UK9020325	ENG	Black legged kittiwake	*Rissa tridactyla*	Not assessed	https://publications.naturalengland.org.uk/file/4718490422607872	https://publications.naturalengland.org.uk/publication/5340976100933632
Northumberland Marine SPA	UK9020325	ENG	Puffin	*Fratercula arctica*	Not assessed	https://publications.naturalengland.org.uk/file/4718490422607872	https://publications.naturalengland.org.uk/publication/5340976100933632
Noss SPA	UK9002081	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8561/documents/29	None available
Noss SPA	UK9002081	SCO	Gannet	*Morus bassanus*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8561/documents/29	None available

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Noss SPA	UK9002081	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8561/documents/29	None available
Noss SPA	UK9002081	SCO	Puffin	*Fratercula arctica*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8561/documents/29	None available
Outer Firth of Forth and St Andrews Bay Complex SPA	UK9020316	SCO	Gannet	*Morus bassanus*	Favourable maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59
Outer Firth of Forth and St Andrews Bay Complex SPA	UK9020316	SCO	Black legged kittiwake	*Rissa tridactyla*	Favourable maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59
Outer Firth of Forth and St Andrews Bay Complex SPA	UK9020316	SCO	Puffin	*Fratercula arctica*	Favourable maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59	https://apps.snh.gov.uk/sitelink-api/v1/sites/10478/documents/59
Rathlin Island SPA	UK9020011	NI	Fulmar	*Fulmarus glacialis*	None available	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/rathlin-spa-conservation-objectives-2015.pdf	https://www.daera-ni.gov.uk/sites/default/files/consultations/doe/marine-consultation-rathlin-island-2012.pdf
Ronas Hill – North Roe and Tingon Ramsar	UK13054	SCO	Fulmar	*Fulmarus glacialis*	None available	None available	None available

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Rousay SPA	UK9002371	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8573/documents/29	None available
Rousay SPA	UK9002371	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8573/documents/29	None available
St Abb`s Head to Fast Castle SPA	UK9004271	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8579/documents/29	None available
St Kilda SPA	UK900103	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8580/documents/67	None available
Sule Skerry and Sule Stack SPA	UK9002181	SCO	Gannet	*Morus bassanus*	Favourable maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8581/documents/29	None available
Sule Skerry and Sule Stack SPA	UK9002181	SCO	Puffin	*Fratercula arctica*	Favourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8581/documents/29	None available
Sumburgh Head SPA	UK9002511	SCO	Fulmar	*Fulmarus glacialis*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8582/documents/29	None available
Sumburgh Head SPA	UK9002511	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8582/documents/29	None available

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The Shiant Isles SPA	UK9001041	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8575/documents/29	None available
Troup, Pennan and Lion`s Heads SPA	UK9002471	SCO	Guillemot	*Uria aalge*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8587/documents/29	None available
Troup, Pennan and Lion`s Heads SPA	UK9002471	SCO	Fulmar	*Fulmarus glacialis*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8587/documents/29	None available
Troup, Pennan and Lion`s Heads SPA	UK9002471	SCO	Herring gull	*Larus argentatus*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8587/documents/29	None available
Troup, Pennan and Lion`s Heads SPA	UK9002471	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8587/documents/29	None available
Troup, Pennan and Lion`s Heads SPA	UK9002471	SCO	Razorbill	*Alca torda*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8587/documents/29	None available
West Westray SPA	UK9002101	SCO	Fulmar	*Fulmarus glacialis*	Favourable Recovered	https://apps.snh.gov.uk/sitelink-api/v1/sites/8589/documents/29	None available
West Westray SPA	UK9002101	SCO	Black legged kittiwake	*Rissa tridactyla*	Unfavourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8589/documents/29	None available

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Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	UK900222	SCO	Common tern	*Sterna hirundo*	Unfavourable No change	https://apps.snh.gov.uk/sitelink-api/v1/sites/8592/documents/67	None available
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	UK900222	SCO	Eider	*Somateria mollissima*	Favourable Declining	https://apps.snh.gov.uk/sitelink-api/v1/sites/8592/documents/67	None available
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	UK900222	SCO	Little tern	*Sternula albifron*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8592/documents/67	None available
Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar	UK900222	SCO	Sandwich tern	*Sterna sandvicensi)*	Favourable Maintained	https://apps.snh.gov.uk/sitelink-api/v1/sites/8592/documents/67	None available