MUIR MHÒR
OFFSHORE WIND FARM

A joint venture between Fred. Olsen Seawind & Vattenfall

Additional Information Report

Muir Mhòr Offshore Wind Farm

Additional Information Report

Chapter 3: Offshore and Intertidal Ornithology RIAA

Revision No.	Date	Reason for Issue	Author	Reviewer	Approver
01	23/09/2025	Final	HiDef Aerial Surveying Ltd.	MM OWF Ltd.	MM OWF Ltd.

Document Information

Document ID	**MMH-GBE-A004-CNT-0005-003**
Revision	1
Date	23/09/2025

Contents

3. Offshore and Intertidal Ornithology - RIAA 6

3.1. Introduction 6
3.2. Summary of Consultation 7
3.3. Marine SPA 23

3.3.1 Functionally Linked Breeding Seabird Colonies 23
3.3.2 Consideration Of Vessel Activity 23

3.4. Waterbird SPA 23

3.4.1 Moray Firth SPA 23
3.4.2 Consideration of Vessel Activity 24

3.5. Additional Information on Great Black-Backed Gull 24
3.6. SPA Breeding Seabird Populations 24

3.6.1 Project Alone Impacts 26
3.6.2 In-combination Impacts 32

Tables

Table 3.1 Consultation Responses on the Offshore and Intertidal Ornithology RIAA 7
Table 3.2 NatureScot Advice on OFFSAB Functionally Linked Sites - Table A6 of Their Response 23
Table 3.3 Great Black-backed Gull Non-breeding Impacts Apportioned by SPA 24
Table 3.4 NatureScot Advice on in-combination SPA Assessments - Table A5 From Their Response 25
Table 3.5 Guillemot Project Alone PVA Inputs. RIAA Figures in Italics, Shaded Grey. 26
Table 3.6 Guillemot Project-Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey. 27
Table 3.7 Razorbill Project-alone PVA Inputs. RIAA Figures in Italics, Shaded Grey. 28
Table 3.8 Razorbill Project Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey. 28
Table 3.9 Puffin Project Alone Impact Estimates. RIAA Figures in Italics, Shaded Grey. 29
Table 3.10 Kittiwake Project-alone PVA Inputs. RIAA Figures in Italics, Shaded Grey. 30
Table 3.11 Kittiwake Project Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey. 31
Table 3.12 Guillemot In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey. 32
Table 3.13 Guillemot In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey. 33
Table 3.14 Razorbill In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey. 34
Table 3.15 Razorbill In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey. 35
Table 3.16 Puffin In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey. 36
Table 3.17 Puffin In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey. 37
Table 3.18 Kittiwake in-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey. 38
Table 3.19 Kittiwake In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey. 40

Glossary

Term	Definition
Applicant	Muir Mhòr Offshore Wind Farm Limited.
Array Area	The area in which the generation infrastructure (including Wind Turbine Generators and associated foundations and Inter-array Cables), Offshore Electrical Platform(s), and an Interconnector cable will be located.
E2	The ScotWind Plan Option Area where the Proposed Development is located.
EIA Regulations	Collectively the term used to refer to The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, The Marine Works (Environmental Impact Assessment) Regulations 2007, and The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
Floating Foundations	The floating structures on which the Wind Turbine Generators are installed.
Foundation anchors	The mooring structures which anchor the Floating Foundations to the seabed connected to the foundation mooring.
Inter-array Cables	Cables which link the Wind Turbines Generators to each other and the Offshore Electrical Platform(s).
Interconnector cable	Cable which links the Offshore Electrical Platforms to one another, allowing for power to be transferred between the platforms.
Landfall	The area between Mean High Water Springs and Mean Low Water Springs where the Offshore export cables are brought onshore.
Offshore Electrical Platform (OEP)	Offshore platform consisting of High Voltage Alternating Current Equipment, details depending on the final electrical set up of the Project.
Offshore Export Cable Corridor (ECC)	The area within which the Offshore export cable(s) will be installed.
Offshore export cable(s)	The subsea electricity cable circuits running from the Offshore Electrical Platform(s) to the landfall which will transmit the electricity generated by the offshore wind farm to the onshore export cables for transmission onwards to the onshore substation and the national electrical transmission system along with auxiliary cables such as fibre optic cables.
Offshore transmission infrastructure	The proposed transmission infrastructure comprising: Offshore Electrical Platform(s) and associated foundations and substructures; the interconnector cable, the Offshore export cables; and the landfall area up to Mean High Water Springs.
Project	Muir Mhòr Offshore Wind Farm – comprises the wind farm and all associated offshore and onshore components.
Proposed Development	The offshore Muir Mhòr Offshore Wind Farm project elements to which the Offshore Environmental Impact Assessment Report relates.
Wind Turbine Generator (WTG)	The wind turbines that generate electricity consisting of tubular towers and blades attached to a nacelle housing mechanical and electrical generating equipment.

Acronyms and Abbreviations

Term	Definition
AIR	Additional Information Report
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EU	European Union
GW	Gigawatt
HRA	Habitat Regulations Appraisal
IAC	Inter-Array Cables
LSE	Likely Significant Effect
MD-LOT	Marine Directorate– Licensing Operations Team
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MW	Megawatt
NTS	Non-Technical Summary
OEP	Offshore Electrical Platform
OWF	Offshore Wind Farm
PVA	Population Viability Analysis
RIAA	Report to Inform Appropriate Assessment
SMP	Sectoral Marine Plan
SPA	Special Protection Area
UK	United Kingdom
WTG	Wind Turbine Generator

3. OFFSHORE AND INTERTIDAL ORNITHOLOGY - RIAA

3.1. INTRODUCTION

3.1.1. This Chapter provides the further information requested by NatureScot in relation to Appropriate Assessment for Offshore and Intertidal Ornithology; consultation response dated 4 March 2025. Please see Section 3.2, Table 3.1 for the full consultation summary including all other relevant consultee comments.

3.1.2. The NatureScot advice relates to the following three types of Special Protection Area (SPA) addressed in this Additional Information Report (AIR) as follows:

- Marine SPAs, Section 3.3;
- Waterbird SPAs, Section 3.4; and
- SPA Breeding Seabird Populations, Section 3.6.

3.1.3. Sections 3.3 and 3.4 provide short clarifications with Section 3.5 providing an additional clarification in relation to great black-backed gull. Section 3.6 provides a summary of the updated Population Viability Analysis (PVA) model outputs in relation to SPA breeding seabird populations, with the associated project interpretation and conclusions.

3.1.4. All other consultee responses are addressed in Table 3.1 itself, except for Natural England, where the updated PVA outputs for puffin at Coquet Island and the Farnes are also provided in Section 3.6.

3.1.5. This Chapter has been provided as result of the Additional Information Request from MD-LOT on the advice of NatureScot. The conclusions drawn in the Chapter are based on the methods, and assumptions around those methods, that have been applied in order to provide NatureScot with requested additional environmental information. The Applicant maintains that the approach taken in the Environmental Impact Assessment Report (EIAR) and the Report to Inform Appropriate Assessment (RIAA) submitted in November 2024 remains the most biologically accurate approach. The use of displacement matrices for this situation as requested by NatureScot is considered likely to overestimate the predicted impacts to breeding colonies due to the assumptions of connectivity between seabird colonies and the Array Area made using this approach, which is not the case when using the SeabORD model. Therefore, this Chapter does not update the RIAA nor substitute it and does not alter the conclusions of the EIAR, which has not changed as a result of the AIR provided.

3.2. SUMMARY OF CONSULTATION

Table 3.1 Consultation Responses on the Offshore and Intertidal Ornithology RIAA

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
15/01/2025	Aberdeenshire Council	Comments on this consultation are limited to the intertidal zone where this overlaps with the onshore element of this overall development. The cables from the offshore windfarm are to be brought ashore using Horizontal Directional Drilling therefore there will not be any direct disturbance of the intertidal zone. It is noted that some disturbance of birds using inter-tidal is anticipated from vessels associated with the offshore works, however it is considered to be of minor significance and temporary during construction. No long-term significant adverse impact is anticipated. The conclusion in relation to inter-tidal ornithology is considered acceptable.	Noted.
04/02/2025	DAERA	Comparing the project area and the foraging ranges from the Northern Ireland SPAs, the following should be assessed within the Report to Inform Appropriate Assessment (RIAA). Copeland Island SPA – Manx Shearwater – these are mentioned in the EIAR but not carried over to the HRA RIAA so has not been assessed. The above designated features should be accounted for in RIAA, but they are not. However, we expect the screening assessment to show no Likely Significant Effect (LSE). East Coast Marine pSPA – Manx Shearwater – this proposed SPA is not mentioned in either report, as the designation overlaps with the Copleland Island SPA population the conclusions would be the same.	Noted. The RIAA identifies potential attractions to artificial lighting as the key impact pathway affecting Manx shearwater. The current knowledge base only supports a qualitative assessment at this time, so the information presented in paragraphs 8.2.103 – 8.2.109 of the RIAA applies equally to the shearwater population at Copeland Island SPA and to the overlapping East Coast Marine pSPA.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
04/02/2025	DAERA	Comparing the project area and the foraging ranges from the Northern Ireland SPAs, the following should be assessed within the RIAA. Rathlin Island SPA – Fulmar – The array is within foraging range of Rathlin Fulmar which are an assemblage species component of the SPA. They are not included on either report. The above designated features should be accounted for in the RIAA, but they are not. However, we expect the screening assessment to show no LSE.	Noted. The RIAA considered changes to prey and accidental pollution as the key impact pathways potentially affecting fulmar; addressed in paragraphs 8.2.49 – 8.2.51, and paragraphs 8.2.52 – 8.2.56. The information, qualitative assessment and proposed mitigation measures provided in the RIAA for these two impact pathways – relevant to all SPA seabird qualifiers – apply equally to fulmar from Rathlin Island SPA.
04/02/2025	Flotation Energy	The conclusions of the Applicant's assessment of potential impact to ornithological receptors in the EIA report and the RIAA indicated no Adverse Effect on Site Integrity (AEOSI) from the project alone but does identify an in combination risk of AEOSI. Whilst recognising that ornithological assessments are conservative and precautionary, the conclusion of no AEOSI from the project alone should be reviewed as some estimated impacts are upper than expected. Scottish Ministers, in their determination of Green Volt deemed 0.8 puffin/annum to qualify as a risk of AEOSI for the project alone, despite being a fraction of an animal on the basis that, over the lifetime of the project the effect would be significant. The Applicant has identified a 0.39 puffin/annum impact from the project alone and this may be met with the same response from Scottish Ministers as was given to Green Volt.	Noted.
04/02/2025	Flotation Energy	Similarly, the PVA assessment of Guillemot associated with the Buchan Ness to Collieston Coast SPA indicated a 6.1% reduction in end population size. This has been deemed to be of no risk of producing AEOSI; however, given such a level of impact (in excess of 5% of the population being affected), this conclusion seems	Guillemot at Buchan Ness to Collieston Coast SPA are addressed in Sections 3.6.1 and 3.6.2, in relation to project-alone and in-combination impacts.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		surprising. It may be useful to review the model to ensure the figures are correct and/or reconsider the AEOSI status.	
01/04/2025	JNCC	The Irish Sea Front SPA has not been included in either the Habitat Regulations Appraisal (HRA) Screening Report or the RIAA, even though it seems to meet the criteria specified in Table 4.2 of the HRA Screening Report. Regardless, due to the location of the proposed development and the distance from the Irish Sea Front SPA, it is unlikely that foraging access by the qualifying feature, Manx shearwater, would be disturbed or limited by the development.	Advice noted. No further action required.
04/03/2025	NatureScot	"Additionally, we note there may be a need to provide additional information for: • Farne Islands and Coquet Island for puffin, but advice should be sought from Natural England"	Natural England provided their consultation responses on 12 February 2025 and 24 March 2025. Puffin at Farne Islands SPA and Coquet Island SPA are addressed in Sections 3.6.1 and 3.6.2, in relation to project-alone and in-combination impacts.
04/03/2025	NatureScot	"Broadly, we agree with the RIAA conclusions for the proposal alone, such that we can provisionally advise no adverse effects on site integrity (AEoSI). However, this is subject to the issues highlighted above, where we require additional information and/or clarifications before providing our final advice. For in-combination impacts, our assessment is based on the qualifying species and sites in combination for all projects and plans including Berwick Bank and Green Volt."	Noted. All updated PVAs for the Addendum include full, uncompensated impacts for Green Volt and Berwick Bank.
04/03/2025	NatureScot	"With respect to Scottish SPAs, we provisionally conclude an AEoSI in-combination for: • Forth Islands SPA – gannet • North Caithness Cliffs SPA – kittiwake and puffin	Noted. These SPA populations are addressed in Section 3.6.2 for in-combination PVA.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		• West Westray SPA – kittiwake This advice is subject to the issues highlighted under requested clarifications above."	
04/03/2025	NatureScot	"Additionally, we can provide final advice for the following Scottish SPAs, where we are unable to conclude no AEoSI in-combination: • Sule Skerry and Sule Stacks SPA – gannet As such, a derogation case will be required, with advice provided in Appendix B to our response. "	Noted.
04/03/2025	NatureScot	Moray Firth SPA • This designated site is not included in the application.	Moray Firth SPA is addressed in Section 3.4
04/03/2025	NatureScot	We also note that within 9.3.11 of the RIAA, it highlights that upper and lower scenarios have been run and presented and that these relate to the distributional responses as described in the Displacement Report (Volume 3, Appendix 11.3), however the words lower and higher are not used to describe the range of mortality outputs within this appendix. It is also noted within this paragraph that the Applicant states "…with 'higher' being the NatureScot advised rates of displacement and displacement mortality used in displacement matrices, and 'lower' being those proposed by the developer". However, this is not accurate as we advise a range of scenarios are run, including a lower level of mortality and a higher level of mortality. We then look at both outcomes to make our assessment.	Noted. The 'higher' and 'lower' terminology was taken from the PVA Report (EIAR Volume 3, Appendix 11.5) but incorrectly defined for the RIAA. This terminology, as used in the PVA report, does relate to the upper and lower levels of mortality from NatureScot guidance. In this AEI report 'upper' is now used in preference to 'higher' in order to align with the terminology in the NatureScot guidance.
04/03/2025	NatureScot	We recommend that advice is sought from Natural England in respect of English SPAs, specifically: • Coquet Island SPA • Farne Islands SPA • Flamborough and Filey Coast SPA Advice should be sought from the Department of	Consultation responses were received from all the parties mentioned here by NatureScot: DAERA, JNCC and Natural England.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		Agriculture, Environment and Rural Affairs (DAERA) with regards to Copeland Islands SPA. For the Irish Sea Front SPA, advice should be sought from JNCC.	
04/03/2025	NatureScot	Transboundary impacts For the following SPAs, advice should be sought from the National Parks & Wildlife Service (Ireland): • North-west Irish Sea SPA • Seas off Wexford SPA	While NPWS did not provide a separate consultation response, the qualitative assessment and advice on fulmar and Manx shearwater contained within the RIAA applies equally to these two Irish SPAs.
04/03/2025	NatureScot	Report to Inform the Appropriate Assessment (RIAA) As Marine Directorate is the competent authority, our advice is provided to assist with the Appropriate Assessment in considering the impacts on protected interests of European Sites within Scotland…. Our review of the CPS output (and other factors) has generally enabled us to consider whether a clear conclusion can be reached (i.e. AEoSI or No AEoSI). However, in some instances this has not been the case as the range of predicted impacts is large, reflecting the uncertainty within the assessment. As part of our assessment of in-combination effects, we consider factors such as: • Short / long term colony trend, • Qualifying species condition, • Species life history, • Proportional importance of species in Scotland and UK, • Recent HPAI impacts, and • Climate change sensitivity. It should be noted for kittiwake and gannet that the 'mortality from proposal alone' value presented in our assessment below is based upon the combined	Noted.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		displacement and collision value presented in the RIAA. We have used this value as there is evidence that shows individuals of these species show variable responses to offshore wind farms, where some are susceptible to displacement and some collision. Furthermore, for all species we have presented the mortality range associated with the low and high displacement parameters. It should be noted that while we consider the range of displacement outputs produced, due to the uncertainties associated with the displacement assessment our AEoSI conclusion is based upon the upper displacement outputs in this case.	
04/03/2025	NatureScot	Summary – proposal alone assessment Broadly, we agree with the RIAA conclusions for the proposal alone, such that we can provisionally advise no AEoSI. However, this is subject to the issues highlighted above, where we require additional information and/or clarifications before providing our final advice.	NatureScot interim views are presented in Table A5 in Section 3.3
04/03/2025	NatureScot	Summary – in-combination assessment Table A5 below has been compiled by NatureScot to provide a summary of those SPAs for which we consider there is AEoSI or where we are unable to conclude No AEoSI, in all cases these conclusions are in-combination with Berwick Bank and Green Volt. Please note we have not used a threshold to reach our conclusions, instead our assessment includes aspects of precaution as well as relevant contextual information as provided in our conclusions above. For each CPS column, high displacement mortality rate value followed by low displacement mortality rate value have been provided"	NatureScot's summary table, Table A5, is copied in Section 3.3, with the updated PVAs for SPA seabird populations provided in Sections 3.6.1 & 3.6.2.
04/03/2025	NatureScot	"Buchan Ness to Collieston Coast SPA We conclude no AEoSI for herring gull in-combination, based on the combined impact from collision at Buchan Ness to Collieston Coast SPA as the CPS values are	Guillemot and kittiwake at Buchan Ness to Collieston Coast SPA are addressed in Section 3.6.2.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		sufficiently high. We are unable to make a AEoSI determination for guillemot and kittiwake at Buchan Ness to Collieston Coast SPA due to the issues surrounding the outputs from SeabORD."	
04/03/2025	NatureScot	"Cape Wrath SPA Provisionally we conclude no AEoSI for kittiwake in-combination, based on the combined impact from collision at Cape Wrath SPA as the CPS values are sufficiently high. However, this provisional advice is subject to the issues surrounding apportioning and justification being provided around why the more recent population counts were not used in the assessment and commentary around the likely implications of this decision."	Kittiwake at Cape Wrath SPA is addressed in Section 3.6.2.
04/03/2025	NatureScot	"East Caithness Cliffs SPA We are unable to make an AEoSI determination for kittiwake at East Caithness Cliffs SPA due to the issues surrounding the outputs from SeabORD."	Kittiwake at East Caithness Cliffs SPA is addressed in Section 3.6.2.
04/03/2025	NatureScot	"Fair Isle SPA We conclude no AEoSI for gannet in-combination, based on the combined impact from collision at Fair Isle SPA as the CPS values are sufficiently high."	Noted.
04/03/2025	NatureScot	"Forth Islands SPA We provisionally conclude AEoSI for gannet, in-combination, based on the combined impact from collision and displacement, at Forth Islands SPA. Our conclusion takes into account: • The very low CPS values, • Although the species is in favourable condition, the population has been heavily impacted by HPAI. However, this is subject to justification being provided around why the more recent population counts were not	Noted. PVA outputs for gannet at Forth Islands are presented in the RIAA. Because there has been no change in impact, there is no further PVA to present in this Addendum. The justification around the chosen population count data is presented in **AIR Section 2.3 (Gannet)**.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		used in the assessment and commentary around the likely implications of this decision. We are unable to make an AEoSI determination for kittiwake and puffin at Forth Islands SPA due to the issues surrounding the outputs from SeabORD."	
04/03/2025	NatureScot	"Fowlsheugh SPA We are unable to make a AEoSI determination for kittiwake and razorbill at Fowlsheugh SPA due to the issues surrounding the outputs from SeabORD"	Kittiwake and razorbill at Fowlsheugh SPA are addressed in Section 3.6.2.
04/03/2025	NatureScot	"Hermaness, Saxa Vord and Valla Field SPA We provisionally conclude no AEoSI for gannet in-combination, based on the combined impact from collision and displacement, at Hermaness, Saxa Vord and Valla Field SPA as the CPS values are sufficiently high. However, this is subject to justification being provided around why the more recent population counts were not used in the assessment and commentary around the likely implications of this decision"	Noted. The justification around the chosen population count data is presented in **AIR Section 2.3 (Gannet)**.
04/03/2025	NatureScot	"North Caithness Cliffs SPA We provisionally conclude AEoSI for kittiwake, in-combination, based on the combined impact from collision and displacement, taking into account: • The low CPS values, • Unfavourable declining condition of the species, • A 45% decline in population between Seabird 2000 and the Seabirds Count. We provisionally conclude AEoSI for puffin, in-combination, based on the combined impact from collision and displacement, taking into account: • The low CPS values, • Unfavourable declining condition of the species,	Kittiwake and puffin at North Caithness Cliffs SPA are addressed in Section 3.6.2.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		• A 56% decline in population between Seabird 2000 and the Seabirds Count. However, this provisional advice is subject to the issues surrounding apportioning for kittiwake and justification being provided around why the more recent population counts were not used in the assessment and commentary around the likely implications of this decision."	
04/03/2025	NatureScot	"North Rona and Sula Sgeir SPA We conclude no AEOSI for gannet in-combination, based on the combined impact from collision and displacement, at North Rona and Sula Sgeir SPA as the CPS values are sufficiently high."	Noted.
04/03/2025	NatureScot	"Noss SPA We conclude no AEOSI for gannet in-combination, based on the combined impact from collision and displacement, at Noss SPA, taking into account: • The moderately low CPS values. • Although the species is in favourable condition, the population has been heavily impacted by HPAI."	Noted.
04/03/2025	NatureScot	St Abb's Head to Fast Castle SPA We are unable to make a AEoSI determination for kittiwake at St Abb's Head to Fast Castle SPA due to the issues surrounding the outputs from SeabORD during the displacement aspect of the assessment.	Kittiwake at St Abb's Head to Fast Castle SPA is addressed in Section 3.6.2.
04/03/2025	NatureScot	Sule Skerry and Sule Stack SPA We are unable to conclude no AEOSI for gannet in-combination, based on the combined impact from collision and displacement, at Sule Skerry and Sule Stack SPA, taking into account: • The moderately low CPS values. • Although the species is in favourable condition, the	Noted.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		population has been heavily impacted by HPAI	
04/03/2025	NatureScot	Troup, Pennan and Lion's Heads SPA We are unable to make an AEoSI determination for guillemot, kittiwake and razorbill at Troup, Pennan and Lion's Heads SPA due to the issues surrounding the outputs from SeabORD.	Guillemot, kittiwake and razorbill at Troup, Pennan and Lion's Heads SPA are addressed in Section 3.6.2.
04/03/2025	NatureScot	West Westray SPA We provisionally conclude AEoSI for kittiwake, in-combination, based on the combined impact from collision and displacement, at West Westray SPA, taking into account: • The low CPS values, • The unfavourable declining condition of the species, • A 92% decline between Seabird 2000 and the Seabirds Count. However, this provisional advice is subject to the issues surrounding apportioning for kittiwake.	Kittiwake at West Westray SPA is addressed in Section 3.6.2.
04/03/2025	NatureScot	Seabird Assemblage For those SPAs which have a seabird assemblage feature, where we have concluded AEoSI for at least one named species of the seabird assemblage, then the same conclusion is reached for the assemblage feature. Any named qualifying species of an assemblage feature in an SPA is protected in their own right. The SPA conservation objectives are set for individual species rather than the assemblage and therefore the features should be assessed and any impacts concluded at the individual species level. This is the established position in Scotland, which differs from the approach taken in England"	Noted.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
04/03/2025	NatureScot	"For the seabird assemblage feature (and named species) we therefore conclude AEoSI in-combination at: • Forth Islands SPA (gannet) – provisional advice • North Caithness Cliffs SPA (kittiwake and puffin) – provisional advice • West Westray SPA (kittiwake) – provisional advice This list may be subject to change, pending the further clarification… as well as clarifications around apportioning and justification being provided around population counts."	Noted.
04/03/2025	NatureScot	Additionally, for the seabird assemblage feature (and named species) we are unable to conclude no AEoSI in-combination at: • Sule Skerry and Sule Stack SPA (gannet)	Noted.
04/03/2025	NatureScot	Outer Firth of Forth and St Andrews Bay Complex (OFFSAB) marine SPA It is noted that in Table 8.4, the Applicant lists the functionally linked breeding seabird colonies to the OFFSAB SPA, and it is stated that the Forth Islands SPA is functionally linked and no other SPAs are listed. However, this is incorrect, and many more breeding colony SPAs are linked to this marine SPA. Our provisional assessment of impacts to the OFFSAB marine SPA breeding seabird qualifying species was undertaken with respect to all the functionally linked breeding colony SPAs1. These are listed in Table A6 below along with the relevant species and the colony SPA conclusion for AEoSI.	This marine SPA is addressed in Section 3.3
04/03/2025	NatureScot	Marine SPAs Section 8.2.32 of the RIAA states that there is no risk of AEoSI from direct distributional responses, i.e. vessel disturbance, at any SPAs for susceptible species.	Marine SPAs are addressed in Section 3.3

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		However, we disagree with this outcome as the Applicant has not fully assessed the potential implications of vessel movement on marine SPAs. From our understanding, the Applicant has not decided which port(s) will be used during Construction, Operation and Maintenance and Decommissioning. Without this information a full understanding of the proposed vessel movement on protected species of any marine SPAs that the vessels may transverse through cannot be understood.	
04/03/2025	NatureScot	Whilst we would ordinarily have expected to see an outline plan within the Application documentation, we are aware that the location of the port(s) / assembly yard(s) /etc. has yet to be determined. Therefore, we are content, that this can be finalised through the discharge of consent conditions, as part of a vessel management plan, should consent be awarded.	Noted and discussed in Sections 3.3 and 3.4
04/03/2025	NatureScot	Please note however, in our advice on this impact pathway for other nearby proposed wind farms, we require further monitoring of the qualifying species to better understand species distributions, populations and locations of moulting birds to inform requirements for spatial and / or seasonal mitigation depending on selection of ports and vessel transit routes. It would be helpful to continue to discuss this further with the Applicant as more information becomes available.	Noted for discussion at post-consent stage.
04/03/2025	NatureScot	Furthermore, as indicated above, the Moray Firth SPA is not included in the EIA Report or RIAA. Once further detail is known post-consent around the location of port(s) and potential vessel transit routes, impacts to the Moray Firth SPA and any other marine SPAs may need to be reassessed, with consideration given to all relevant Conservation Objectives, at that stage.	Moray Firth SPA is addressed in Section 3.4

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
04/03/2025	NatureScot	NatureScot have noted that the SeabORD model outputs presented do not appropriately account for connectivity between the development and designated sites. This has resulted in potentially erroneous outputs including predictions of positive effects upon seabird populations. NatureScot highlight that this may have also affected assessment of the following protected species from English designated sites which may be impacted by the proposed wind farm; • Farne Islands SPA: Atlantic Puffin - Seabird assemblage, Breeding • Coquet Island SPA: Atlantic Puffin - Seabird assemblage, Breeding Within their advice (letter dated 04th March 2025, ref: CNS REN OSWF Muir Mhor) NatureScot suggest options to resolve issues encountered with the SeabORD modelling and provide detailed instruction on how to repeat and review the ornithology assessment.	Natural England provided their consultation responses on 12 February 2025 and 24 March 2025. Puffin at Farne Islands SPA and Coquet Island SPA are addressed in Sections 3.6.1 and 3.6.2 in relation to project-alone and in-combination impacts.
24/03/2025	Natural England *second response*	Natural England welcome re-consultation on any re-assessment that significantly changes conclusions to indicate potential for AEoSI , either alone or in-combination, for any English designated sites. Otherwise, we refer to the advice provided in our previous response (letter dated 12th February 2025, NE ref: 496071).	Noted.
12/02/2025	Natural England *first response*	We have considered the documents provided with the consultation request in our review, and the measures proposed to mitigate for all identified adverse effects that could potentially occur as a result of the proposal. We advise that, providing there are no substantial changes to the project design envelope, this project alone will not have an AEoSI on any English SPA or SAC. We also agree that any addition to in combination impacts with other projects will be deminimis and as such are unlikely	Noted.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		to significantly contribute to AEoSI for any English SPA or SAC in combination with the other Plans or Projects assessed	
27/03/2025	RSPB	RSPB Scotland welcome the Applicant's recognition of potential Adverse Effects on Site Integrity (AEoSI) of seven SPAs arising from the project in combination with other North Sea wind farms. RSPB Scotland objects to the Application due to these potential AEoSI, principally in relation to the following designated sites, species, and adverse impacts: • Black-legged Kittiwake from the following SPAs: - Buchan Ness to Collieston Coast SPA - East Caithness Cliffs SPA - Troup, Pennan and Lion's Head SPA - Fowlsheugh SPA - Forth Islands SPA • Razorbill from the Fowlsheugh SPA • Northern Gannet from the Forth Islands SPA • Atlantic Puffin from the Sule Skerry and Sule Stack SPA	Noted.
27/03/2025	RSPB	However, RSPB Scotland notes that while the Applicant's Report to Inform the Appropriate Assessment (RIAA) concludes No AEoSIs there is also a 'without prejudice' case set out for potential AEoSIs should Scottish Ministers disagree. This includes potential AEoSIs for. • Guillemot from Buchan Ness to Collieston SPA • Atlantic Puffin from the Forth Islands SPA • Gannet from Forth Islands SPA	Noted in relation to the derogation and compensation package.
27/03/2025	RSPB	We are concerned that there appear to be some problems with the PVA apportionment. Therefore, it is not possible to come to a conclusion regarding potential effects arising from the project alone nor in combination with other	Updated PVAs for the relevant SPA populations are provided by this AEIR, as referenced in Sections 3.6.1 and 3.6.2

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		projects for the above species at the following SPAs: • Buchan Ness to Collieston Coast SPA • Farne Islands SPA • Forth Islands SPA • Fowlsheugh SPA • St. Abb's Head to Fast Castle SPA • Troup, Pennan and Lion's Head SPA	
27/03/2025	RSPB	For several SPAs, the potential effects for their species, of the project in-combination with other North Sea developments are significant. These impacts are additional to existing population declines and events such as Highly Pathogenic Avian Influenza (HPAI). Without exception, the impacts would add pressure to SPA species already struggling and according to the latest Seabird Population Kittiwake and Puffin Seabird Population Trends and Causes of Change 1986- 2023 (BTO November 2024) their numbers are plummeting.	Noted
27/03/2025	RSPB	Habitats Regulations and Sectoral Marine Plan (SMP) SPAs are designated due to supporting the most important bird species within the UK and therefore their protection is of paramount importance. However, the Regulations do include exceptions to this protection so that urgently needed public interest projects can proceed, despite it not being possible to ascertain for the lifetime of the project, there will not be AEoSIs alone or in-combination with other projects. These further requirements (derogations) are: • It can be demonstrated that there are no lesser damaging alternative solutions, • There are imperative reasons of overriding public interest (IROPI) for the project to go ahead, and • Compensation measures to maintain the coherence of	Noted in relation to the derogation and compensation package.

Date	Consultee and Type of Consultation	Description / Issues Raised	How This Has Been Considered in The AIR
		the UK/National Sites Network are provided. Whilst RSPB Scotland recognise the inclusion of the Application site within the SMP for Offshore Wind Energy, due to the potential AEoSI, Derogations are required, and the Scottish Ministers must ensure the requirements of Regulations 29 and 36 of the Offshore Habitats Regulations are passed before it can grant permission for the Application.	

3.3. MARINE SPA

3.3.1 FUNCTIONALLY LINKED BREEDING SEABIRD COLONIES

3.3.1. NatureScot advised that a greater range of functionally linked breeding colonies be screened in against the Outer Firth of Forth and St Andrews Bay Complex SPA, as set out in Table 3.2.

Table 3.2 NatureScot Advice on OFFSAB Functionally Linked Sites - Table A6 of Their Response

Site	Species	NatureScot Conclusion of AEoSI
Buchan Ness to Collieston Coast SPA	Guillemot	Unable to reach a conclusion
	Kittiwake	Unable to reach a conclusion
East Caithness Cliffs SPA	Kittiwake	Unable to reach a conclusion
Forth Islands SPA	Gannet	Provisional AEoSI in-combination
	Kittiwake	Unable to reach a conclusion
	Puffin	Unable to reach a conclusion
Fowlsheugh SPA	Kittiwake	Unable to reach a conclusion
North Caithness Cliffs SPA	Kittiwake	Provisional AEoSI in-combination
St Abb's Head to Fast Castle SPA	Kittiwake	Unable to reach a conclusion
Troup, Pennan and Lion's Heads SPA	Kittiwake	Unable to reach a conclusion
West Westray SPA	Kittiwake	Provisional AEoSI in-combination

3.3.2. These functionally linked colonies are addressed below in Section 2.6, and the updated PVA outputs should allow NatureScot to also conclude their advice in relation to this mSPA.

3.3.2 CONSIDERATION OF VESSEL ACTIVITY

3.3.3. In relation to potential seabird disturbance arising from vessel transit movements either within, or in proximity to the OFFSAB SPA, and any other potentially relevant marine SPAs, NatureScot advise the following:

3.3.4. "We are aware that the location of the port(s) / assembly yard(s) / etc. has yet to be determined. Therefore, we are content that this can be finalised through the discharge of consent conditions, as part of a vessel management plan, should consent be awarded."

3.4. WATERBIRD SPA

3.4.1 MORAY FIRTH SPA

3.4.1. NatureScot noted that the Moray Firth SPA was not included in the HRA screening report. It is designated in the non-breeding season for common scoter, eider, great northern diver, goldeneye, long-tailed duck, red-breasted merganser, red-throated diver, scaup, Slavonian grebe, and velvet scoter. It is also designated for shag in both breeding and non-breeding seasons.

3.4.2. The assessment conclusions for this SPA are the same as for the other designated waterbird SPAs addressed in the EIAR. There is not considered to be any potential impact pathway for shag at this SPA, excepting vessel activity (considered in the next section).

3.4.2 CONSIDERATION OF VESSEL ACTIVITY

3.4.3. As noted above for marine SPAs, NatureScot has flagged the potential for disturbance to waterbird SPAs, arising from vessel activity, depending on the selected port(s) and transit routes. They acknowledged that assessment is not possible at present as the final port location(s) are not yet determined and they advise that the matter can be addressed by the inclusion and implementation of appropriate conditions on the Section 36 consent or marine licence.

3.5. ADDITIONAL INFORMATION ON GREAT BLACK-BACKED GULL

3.5.1. NatureScot requested additional PVA for some species based on their cumulative impacts. This included cumulative/in-combination predicted impacts on great black-backed gull, which is addressed in **AIR Section 2.7.2.** This species was recorded on-site during the non-breeding season only. Table 3.3 presents the SPA apportioning calculations used to consider the potential impacts on great black-backed gull under HRA. The apportioned mortality estimates are each less than 0.2 bird per annum, which is defined by NatureScot as ”non-tangible” and so it can safely be concluded that there is **no risk of AEOSI** for any of the SPA populations in question (without the need for project-alone or in-combination PVA modelling).

Table 3.3 Great Black-backed Gull Non-breeding Impacts Apportioned by SPA

SPA	Project-alone GBBG Total Mortality	BDMPS[1]	Adult BDMPS Apportioning Factor	SPA-apportioned GBBG Adult Mortalities
Calf of Eday	17.422	562	0.006148864	0.107
Copinsay	17.422	436	0.004770293	0.083
East Caithness Cliffs	17.422	350	0.003829364	0.067
Hoy	17.422	120	0.001312925	0.023
Isles of Scilly	17.422	1802	0.000196939	0.003
North Rona & Sula Sgeir	17.422	382	4.37642E-05	0.001

BDMPS; Biologically Defined Minimum Population Scale, Furness (2015)

3.6. SPA BREEDING SEABIRD POPULATIONS

3.6.1. In their consultation response of 4 March 2025, NatureScot advised that they were unable to reach conclusions on AESI for the following SPA qualifying features:

- Troup, Pennan and Lion’s Heads SPA – guillemot, razorbill, kittiwake;
- Buchan Ness to Collieston Coast SPA – guillemot, kittiwake;
- Fowlsheugh SPA – razorbill, kittiwake;
- Forth Islands SPA – puffin, kittiwake;

- East Caithness Cliffs SPA – kittiwake; and
- St Abb's Head to Fast Castle SPA – kittiwake.

3.6.2. This Chapter of the AIR provides the updated PVA outputs to address NatureScot's request for further information, as noted in Table 3.4 below. The additional information provided by this Addendum should allow NatureScot to give their final advice in relation to AEOSI for the SPA seabird populations in question.

Table 3.4 NatureScot Advice on in-combination SPA Assessments - Table A5 From Their Response

Site	Species	CPS	NatureScot Conclusion of AEoSI In-combination
Buchan Ness to Collieston Coast SPA	Guillemot	Unable to reach a conclusion	
	Herring gull	0.973	No AEoSI
	Kittiwake	Unable to reach a conclusion	
Cape Wrath SPA	Kittiwake	0.971 - 0.978	Provisional no AEoSI
East Caithness Cliffs	Kittiwake	Unable to reach a conclusion	
Fair Isle SPA	Gannet	0.936 - 0.961	No AEoSI
Forth Islands SPA	Gannet	0.807 - 0.861	Provisional AEoSI
	Kittiwake	Unable to reach a conclusion	
	Puffin	Unable to reach a conclusion	
Fowlsheugh SPA	Kittiwake	Unable to reach a conclusion	
	Razorbill	Unable to reach a conclusion	
Hermaness, Saxa Vord and Valla Field SPA	Gannet	0.932 - 0.958	Provisional no AEoSI
North Caithness Cliffs SPA	Kittiwake	0.817 - 0.867	Provisional AEoSI
	Puffin	0.660 - 0.778	Provisional AEoSI
North Rona and Sula Sgeir	Gannet	0.984 - 0.991	No AEoSI
Noss SPA	Gannet	0.922 - 0.953	No AEoSI
St Abb's Head to Fast Castle SPA	Kittiwake	Unable to reach a conclusion	
Sule Skerry and Sule Stack SPA	Gannet	0.909 - 0.935	Unable to conclude no AEoSI
Troup, Pennan and Lion's Heads SPA	Guillemot	Unable to reach a conclusion	
	Kittiwake	Unable to reach a conclusion	
	Razorbill	Unable to reach a conclusion	
West Westray SPA	Kittiwake	0.644 - 0.740	Provisional AEoSI

3.6.3. In addition to these SPAs, this Addendum also provides the updated modelling for SPAs in England where Natural England is the statutory adviser (see Table 2.1, presenting the consultation summary). Natural England requested further information for puffin at Farne Islands and Coquet Island SPAs (response dated 24 March 2025).

3.6.1 PROJECT ALONE IMPACTS

3.6.4. This section presents the PVA inputs and outputs for all relevant SPA populations where updated project-alone PVA was required for guillemot, razorbill and kittiwake. Updated project-alone impact estimates for puffin remain below the NatureScot recommended threshold for providing PVAs, as summarised in Table 3.5 below.

3.6.5. The 'upper' and 'lower' scenarios presented in each table relate to choice of displacement and mortality rates from displacement matrices, following NatureScot Guidance Note 8, with the specific rates provided in the table footnotes.

3.6.6. There is no change to gannet impacts and so this species is not addressed further in this Addendum. Please refer to the RIAA regarding this species.

GUILLEMOT

3.6.7. PVA of updated distribution response has been undertaken for the guillemot populations at Buchan Ness to Collieston Coast SPA and Troup, Pennan and Lion's Head SPA, as presented in Table 3.5. AIR updates are presented in **bold**, with the figures from the RIAA noted in *italics* in the shaded grey cells.

Table 3.5 Guillemot Project Alone PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Mortality Estimates		Impacts on Survival Rate		Impacts on Productivity
		Breeding Adults	Immatures	Adult	Immature	
Buchan Ness to Collieston Coast	*Upper*	*62.252~*	*62.748*	*0.001527*	*0.001642*	0~
	Lower	*20.747*	*20.917*	*0.000509*	*0.000547*	0~
	Upper	**176.981**	**190.302**	**0.0043417**	**0.0046685**	**0**
	Lower	**89.592**	**96.336**	**0.0021978**	**0.0023633**	**0**
Troup, Pennan and Lion's Heads	*Upper*	*144.794*	*38.005*	*0.000792*	*0.000849*	*0.000096*
	Lower	*12.666*	*12.669*	*0.000265*	*0.000283*	*0.000096*
	Upper	**107.192**	**115.261**	**0.0022463**	**0.0024154**	**0**
	Lower	**54.263**	**58.348**	**0.0011372**	**0.0012227**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates.*

~SeabORD predicted positive impacts so 0 was used as a precautionary approach as agreed with NatureScot for the EIA Report

3.6.8. Table 3.6 presents the outputs from the updated PVAs undertaken for these Project-alone impacts on guillemot. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.6 Guillemot Project-Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA Output at 35 Years		Comparison Notes
		CPS	CGR	
Buchan Ness to Collieston Coast	*Upper*	*0.939* *0.924 - 0.954*	*0.998* *0.998 - 0.999*	*No AEOSI*
	Lower	*0.979* *0.964 - 0.995*	*0.999* *0.999 - 1.000*	
	Upper	**0.835** **0.822 - 0.849**	**0.995** **0.995 - 0.995**	**No AEOSI**
	Lower	**0.913** **0.898 - 0.928**	**0.997** **0.997 - 0.998**	
Troup, Pennan and Lion's Heads	*Upper*	*0.968* *0.954 - 0.982*	*0.999* *0.999 - 0.999*	*No AEOSI*
	Lower	*0.989* *0.974 - 1.000*	*1.000* *0.999 - 1.000*	
	Upper	**0.911** **0.898 - 0.925**	**0.997** **0.997 - 0.998**	**No AEOSI**
	Lower	**0.954** **0.940 - 0.969**	**0.999** **0.998 - 0.999**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates.*

3.6.9. The guillemot population at Buchan Ness to Collieston Coast SPA is considered stable over the long term (Burnell *et al.,* 2023). The predicted impact from the project alone, affecting up to 177 adult guillemots under the worst-case scenario, corresponds to less than a 0.5% reduction in population growth rate compared to an unimpacted population. Such a small change is unlikely to be ecologically significant, particularly for a stable population and when derived from conservative modelling (Jitlal *et al.,* 2017). Importantly, the assessment is based on conservative modelling assumptions, including the use of a matrix approach, a closed population structure, and the exclusion of density-dependent processes in population modelling. More information on the consequences of relying on the matrix-approach to assessment can be found in the Appendix II: Additional Information on SeabORD of the AIR. Therefore, it is concluded with confidence that the project alone will not adversely affect the integrity of the SPA in relation to its guillemot qualifying feature. In-combination impacts are considered in Section 3.6.2.

3.6.10. For Troup, Pennan and Lion's Heads SPA, the 'upper' scenario gave rise to an 0.3% (0.2 – 0.3%) point reduction in projected population growth rate (CGR) and an 8.9% (7.5 – 10.2%) point reduction in projected end population size (CPS) over 35 years. Such Project alone impacts are not considered to present any significant risk to the guillemot population viability and therefore **no risk of AEoSI**. In-combination impacts are considered in Section 3.6.2.

RAZORBILL

3.6.11. PVA of updated project-alone distribution response has been undertaken for the razorbill populations at Fowlsheugh SPA and Troup, Pennan and Lion's Head SPA. Table 3.7 presents the relevant mortality estimates and associated impacts on survival rate. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.7 Razorbill Project-alone PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Mortality Estimates		Impacts on Survival Rate		Impacts on Productivity
		Breeding Adults	Immatures	Adult	Immature	
Fowlsheugh	*Upper*	*0.309*	*0.218*	*N/A*	*N/A*	*N/A*
	Lower	*0.703*	*0.073*	*N/A*	*N/A*	*N/A*
	Upper	**10.512**	**8.857**	**0.0005026**	**0.000537**	**0**
	Lower	**6.219**	**5.257**	**0.0002976**	**0.000319**	**0**
Troup, Pennan and Lion's Heads	*Upper*	*0.155*	*0.109*	*N/A*	*N/A*	*N/A*
	Lower	*0.851*	*0.036*	*N/A*	*N/A*	*N/A*
	Upper	**4.365**	**3.672**	**0.0004946**	**0.000528**	**0**
	Lower	**2.575**	**2.175**	**0.0002921**	**0.000313**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. As project-alone razorbill impacts were not modelled under PVA previously, the survival and productivity rates are set to N/A.*

3.6.12. Table 3.8 presents the outputs from the updated PVAs undertaken for these Project-alone impacts on razorbill. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.8 Razorbill Project Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA Output at 35 years		Comparison Notes
		CPS	CGR	
Fowlsheugh	*Upper*	*N/A*	*N/A*	*No AEOSI*
	Lower	*N/A*	*N/A*	
	Upper	**0.979** **0.929 - 1.030**	**0.999** **0.998 - 1.001**	**No AEOSI**
	Lower	**0.987** **0.939 - 1.039**	**1.000** **0.998 - 1.001**	
Troup, Pennan and Lion's Head	*Upper*	*N/A*	*N/A*	*No AEOSI*
	Lower	*N/A*	*N/A*	
	Upper	**0.980** **0.905 - 1.061**	**0.999** **0.997 - 1.002**	**No AEOSI**
	Lower	**0.987** **0.914 - 1.068**	**1.000** **0.998 - 1.002**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates.*

3.6.13. As presented in Table 3.8, the updated 'upper' Project alone impact scenario for Fowlsheugh SPA resulted in a 0.1% (-0.1 to 2%) point reduction in projected population growth rate (CGR) and a 2.1% (-3 to 7.1%) point reduction in projected end population size (CPS) over 35 years (the intended operational lifetime of the Project). Based on these PVA outputs, it is concluded that there is **no risk of AEoSI** to the razorbill population at this SPA from these Project alone distributional responses.

3.6.14. For Troup, Pennan and Lion's Heads SPA, the 'upper' scenario gave rise to a 0.1% (-0.2% to 3%) point reduction in projected population growth rate (CGR) and a 2% (-6.1 to 9.5%) point reduction in projected end population size (CPS) over 35 years. Based on these PVA outputs, it is concluded that there is **no risk of AEoSI** to the razorbill population at this SPA from these Project alone distributional responses.

3.6.15. So, Project alone impacts are not considered to present any significant risk to the viability of SPA razorbill populations; however, in-combination impacts will also need consideration, as addressed in Section 3.6.2.

PUFFIN

3.6.16. The updated project-alone impact estimates for puffin were compared with the mortality estimates presented in the RIAA, Table 3.9. In this table, AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

3.6.17. None of the SPA-apportioned project-alone mortality estimates resulted in any change to adult survival greater than 0.02% point (right-hand column), so no Project alone PVA was required for any of these SPA puffin populations. Section 3.6.2 presents the in-combination modelling for this species.

Table 3.9 Puffin Project Alone Impact Estimates. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Mortality Estimates		Change in Adult Survival
		Breeding Adults	Immature	
Coquet Island	*Upper*	*0.000~*	*0.000~*	*0.0040*
	Lower	*0.000~*	*0.000~*	*0.0040*
	Upper	**4.017**	**3.894**	**0.0080**
	Lower	**2.410**	**2.337**	**0.0048**
Farne Islands	*Upper*	*0.000~*	*0.000~*	*0.0050*
	Lower	*0.000~*	*0.000~*	*0.0050*
	Upper	**10.572**	**7.096**	**0.0121**
	Lower	**6.344**	**4.258**	**0.0072**
Forth Islands	*Upper*	*0.000~*	*0.000~*	*0.0110*
	Lower	*0.000~*	*0.000~*	*0.0110*
	Upper	**10.968**	**10.634**	**0.0121**
	Lower	**6.582**	**6.381**	**0.0073**
North Caithness Cliffs	*Upper*	*0.387*	*0.376*	*0.0070*
	Lower	*0.232*	*0.225*	*0.0040*
	Upper	**0.434**	**0.421**	**0.0071**
	Lower	**0.260**	**0.252**	**0.0043**
Fair Isle	*Upper*	*0.676*	*0.610*	*0.0050*
	Lower	*0.406*	*0.366*	*0.0030*
	Upper	**0.675**	**0.609**	**0.0051**
	Lower	**0.405**	**0.365**	**0.0030**
Hoy	*Upper*	*0.055*	*0.050*	*0.0060*
	Lower	*0.033*	*0.032*	*0.0040*
	Upper	**0.055**	**0.053**	**0.0064**
	Lower	**0.033**	**0.032**	**0.0038**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates.*

~SeabORD predicted positive impacts so 0 was used as a precautionary approach as agreed with NatureScot for the EIA Report

KITTIWAKE

3.6.18. PVA of the updated project-alone mortality estimates – collision and distribution response – has been undertaken for kittiwake at Buchan Ness to Collieston Coast SPA, Fowlsheugh SPA and Troup, Pennan and Lion's Head SPA; Table 3.10. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.10 Kittiwake Project-alone PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Mortality Estimates		Impacts on Survival Rate		Impacts on Productivity
		Breeding Adults	Immatures	Adult	Immature	
Buchan Ness to Collieston Coast	*Upper*	*13.908*	*0.182*	*0.000513*	*0.000348*	0.000945
	Lower	*13.805*	*0.129*	*0.000510*	*0.000347*	0.000945
	Upper	**11.951**	**15.548**	**0.0004411**	**0.000481**	**0**
	Lower	**9.360**	**12.200**	**0.0003455**	**0.000377**	**0**
Fowlsheugh	*Upper*	*4.950*	*0.074*	*N/A*	*N/A*	*N/A*
	Lower	*4.873*	*0.094*	*N/A*	*N/A*	*N/A*
	Upper	**8.699**	**11.309**	**0.0002166**	**0.000236**	**0**
	Lower	**6.814**	**8.874**	**0.0001697**	**0.000185**	**0**
Troup, Pennan and Lion's Heads	*Upper*	*9.354*	*0.088*	*0.000342*	*0.000175*	*0.000600*
	Lower	*9.233*	*0.088*	*0.000338*	*0.000173*	*0.000600*
	Upper	**6.162**	**7.835**	**0.0002253**	**0.000240**	**0**
	Lower	**4.808**	**6.138**	**0.0001758**	**0.000188**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. As project-alone kittiwake mortalities were not modelled under PVA previously for Fowlsheugh SPA, the survival and productivity rates are set to N/A.*

3.6.19. Table 3.11 presents the outputs from the updated PVAs undertaken for these Project-alone impacts on kittiwake. AIR updates are presented in **bold**, with the RIAA figures noted in italics.

Table 3.11 Kittiwake Project Alone PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA Output at 35 Years		Comparison Notes
		CPS	CGR	
Buchan Ness to Collieston Coast	*Upper*	*0.973* *0.948 - 1.000*	*0.999* *0.999 - 1.000*	No AEOSI
	Lower	*0.973* *0.948 - 1.000*	*0.999* *0.999 - 1.000*	
	Upper	**0.973** **0.948 - 1.000**	**0.999** **0.999 - 1.000**	**No AEOSI**
	Lower	**0.973** **0.948 - 1.000**	**0.999** **0.999 - 1.000**	
Fowlsheugh	*Upper*	*N/A*	*N/A*	No AEOSI
	Lower	*N/A*	*N/A*	
	Upper	**0.990** **0.967 - 1.013**	**1.000** **0.999 - 1.000**	**No AEOSI**
	Lower	**0.992** **0.970 - 1.014**	**1.000** **0.999 - 1.000**	
Troup, Pennan and Lion's Heads	*Upper*	*0.983* *0.957 – 1.010*	*1.000* *0.999 - 1.000*	No AEOSI
	Lower	*0.983* *0.957 – 1.010*	*1.000* *0.999 - 1.000*	
	Upper	**0.990** **0.965 - 1.017**	**1.000** **0.999 - 1.000**	**No AEOSI**
	Lower	**0.992** **0.967 - 1.020**	**1.000** **0.999 - 1.000**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates.*

3.6.20. As presented in Table 3.11, the 'upper' Project alone impact scenario for Buchan Ness to Collieston Coast SPA resulted in a 0.1% (0 to 0.1%) point reduction in projected population growth rate (CGR) and a 2.7% (0 to 5.2%) reduction in projected end population size (CPS) over 35 years. Based on these PVA outputs, it is concluded that there is **no risk of AEoSI** to the kittiwake population at this SPA from Project alone impacts

3.6.21. For Fowlsheugh SPA, the 'upper' scenario gave rise to a 0% (0 to 0.1%) point reduction in projected population growth rate (CGR) and a 1% (-1.3 to 3.3%) point reduction in projected end population size (CPS) over 35 years. Such Project alone impacts are not considered to present any significant risk to kittiwake population viability at this SPA, and it is concluded that there is **no risk of AEoSI**.

3.6.22. For Troup, Pennan and Lion's Heads SPA, the 'upper' scenario gave rise to a 0% (0 to 0.1%) point reduction in projected population growth rate (CGR) and a 1% (-1.7 to 3.5%) point reduction in projected end population size (CPS) over 35 years. Such Project alone impacts are not considered to present any significant risk to kittiwake population viability at this SPA, and it is concluded that there is **no risk of AEoSI**.

3.6.23. Although kittiwake populations are declining at these three SPAs, the PVA counterfactuals (which are used because they are the available metrics which are least sensitive to population

trend) do not indicate that there would be an effect on population viability from Project alone impacts. In-combination impacts also need consideration, as addressed in Section 3.6.2.

3.6.2 IN-COMBINATION IMPACTS

3.6.24. This section presents the PVA input and outputs for all relevant SPA populations where an update was required in respect of in-combination impacts, i.e., guillemot, razorbill, puffin and kittiwake. All PVAs were run following the methods provided in the Volume 3, Appendix 11.5: Population Viability Analysis Report of the EIAR and all the in-combination PVAs included the predicted impacts from Green Volt and Berwick Bank projects, now consented.

3.6.25. The 'upper' and 'lower' scenarios in each table relate to choice of displacement and mortality rates from displacement matrices following NatureScot Guidance Note 8, and with the specific rates provided in the table footnotes.

3.6.26. As there has been no change in gannet impacts, this species is not addressed further in this Addendum as it was agreed with Nature Scot that further PVA was not required. Therefore, please refer to the RIAA for gannet PVA outputs and project conclusions.

GUILLEMOT

3.6.27. Table 3.12 presents the in-combination scenarios modelled under PVA for guillemot in relation to updated estimates of distributional responses. Note that the column with productivity rate is retained for information relating to the SeabORD model outputs presented in the RIAA. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.12 Guillemot In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Adult Mortalities	Predicted Reduction in		
			Adult Survival Rate	Immature Survival Rate	Productivity Rate
Buchan Ness to Collieston Coast	*Upper*	*192.77*	*0.0047290*	*0.0036656*	*0*
	Lower	*77.10*	*0.0018914*	*0.0014531*	*0*
	Upper	**306.39**	**0.007516531**	**0.006790152**	**0**
	Lower	**146.06**	**0.003583081**	**0.003314826**	**0**
Troup, Pennan and Lion's Heads	*Upper*	*103.17*	*0.0021619*	*0.0017143*	*0.0000964*
	Lower	*43.15*	*0.0009043*	*0.0006831*	*0.0000964*
	Upper	**182.65**	**0.003827605**	**0.003532397**	**0**
	Lower	**88.79**	**0.001860668**	**0.001741361**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.28. Table 3.13 presents the outputs from the updated PVAs undertaken for these in-combination impacts on guillemot. AIR updates are presented in **bold**, with the RIAA figures noted in *italics.*

Table 3.13 Guillemot In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario	PVA Output at 35 Years		Conclusions
		CPS	CGR	
Buchan Ness to Collieston Coast	*Upper*	*0.840* *0.827 - 0.854*	*0.995* *0.995 - 0.996*	*Potential risk of AEoSI only for the highest distributional response scenario which is not considered to be realistic.*
	Lower	*0.933* *0.917 - 0.948*	*0.998* *0.998 - 0.998*	
	Upper	**0.747** **0.734 - 0.759**	**0.992** **0.991 - 0.992**	**Potential risk of AEoSI in-combination. Project contribution of 89.59 – 176.98 breeding adult mortalities.**
	Lower	**0.869** **0.855 - 0.884**	**0.996** **0.996 - 0.997**	
Troup, Pennan and Lion's Heads	*Upper*	*0.923* *0.909 - 0.936*	*0.998* *0.997 - 0.998*	*No AEoSI.*
	Lower	*0.967* *0.953 - 0.982*	*0.999* *0.999 - 0.999*	
	Upper	**0.861** **0.848 - 0.874**	**0.996** **0.995 - 0.996**	**No AEoSI in-combination. Project contribution of 54.26 - 107.19 breeding adult mortalities**
	Lower	**0.929** **0.916 - 0.944**	**0.998** **0.998 - 0.998**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.29. For the guillemot population at Buchan Ness to Collieston Coast SPA, both the 'upper' and 'lower' in-combination impact scenarios give rise to a greater level of population consequence, as modelled, and potential **risk of AEOSI**.

3.6.30. The Project contribution is now higher due to the requested use of displacement matrices; however, this method is not considered to give a realistic measure of impact for the reasons set out in Appendix II: Additional Information on SeabORD of the AIR.

3.6.31. Based on the best available scientific evidence, the guillemot population at the Troup to Lion's Heads SPA is currently estimated at 30,663 individuals, exhibiting a stable trend over the past 25 years. While numbers peaked at 38,478 in 2001 and reached a low of 16,325 in 2007, the long-term trajectory demonstrates resilience and overall stability.

3.6.32. The predicted in-combination impact on the SPA population is estimated at 88.79–182.65 individuals, with the project-specific contribution accounting for up to 107.19 adults. Under these scenarios, the counterfactual population growth rates are 0.998 (lower scenario) and 0.996 (higher scenario), representing a less than 0.5% reduction in growth rate compared to an unimpacted population. This level of change is not considered ecologically significant, particularly given the population's demonstrated stability and the conservative nature of the modelling approach (for details see EIA Addendum and the use of the matrix approach over SeabORD). Appendix II: Additional Information on SeabORD of the AIR sets out why the use of displacement matrices is not considered to give a realistic measure of impact.

3.6.33. Given the conservative assumptions in the modelling (such as a closed population, exclusion of density-dependent processes and the matrix approach) the potential effects are likely overstated. Therefore, it is concluded with confidence that the proposed project in-

combination with other planned and consented projects will not adversely affect the integrity of the SPA in relation to its guillemot feature.

RAZORBILL

3.6.34. Table 3.14 presents the in-combination scenarios modelled under PVA for razorbill in relation to updated estimates of distributional responses. Note that the column with productivity rate is retained for information relating to the SeabORD model outputs presented in the RIAA. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.14 Razorbill In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	Adult Mortality Estimates	Predicted Reduction in		
			Adult Survival Rate	Immature Survival Rate	Productivity Rate
Fowlsheugh Table B.17	*Upper*	*135.79*	*0.0065068*	*0.0077383*	*0.0002683*
	Lower	*77.32*	*0.0037052*	*0.0035811*	*0.0002683*
	Upper	**216.36**	**0.0103676**	**0.0100502**	**0**
	Lower	**115.2**	**0.0055199**	**0.0055741**	**0**
Troup, Pennan and Lion's Heads Table B.18	*Upper*	*29.97*	*0.0034049*	*0.0025738*	*0.0000909*
	Lower	*11.65*	*0.0013231*	*0.0009789*	*0.0000909*
	Upper	**32.62**	**0.0037062**	**0.0032019**	**0**
	Lower	**13.54**	**0.0015388**	**0.0013817**	**0**

3.6.35. Table 3.15 presents the outputs from the updated PVAs undertaken for these in-combination impacts on razorbill. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.15 Razorbill In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA output at 35 years		Conclusions
		CPS	CGR	
Fowlsheugh	*Upper*	*0.744* *0.703 - 0.784*	*0.992* *0.990 - 0.993*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.91 razorbill mortalities).*
	Lower	*0.855* *0.810 - 0.902*	*0.996* *0.994 - 0.997*	
	Upper	**0.646** **0.609 - 0.681**	**0.988** **0.986 - 0.989**	**Potential risk of AEoSI in-combination. Project contribution of 6.21 - 10.49 breeding adult mortalities.**
	Lower	**0.791** **0.747 - 0.833**	**0.994** **0.992 - 0.995**	
Troup, Pennan and Lion's Heads	*Upper*	*0.887* *0.816 - 0.959*	*0.997* *0.994 - 0.999*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.95 razorbill mortalities).*
	Lower	*0.956* *0.884 - 1.033*	*0.999* *0.997 - 1.001*	
	Upper	**0.860** **0.794 - 0.934**	**0.996** **0.994 - 0.998**	**Potential risk of AEoSI in-combination. Project contribution of (2.57 - 4.35 breeding adult mortalities).**
	Lower	**0.938** **0.867 - 1.015**	**0.998** **0.996 - 1.000**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.36. The Scottish Ministers' Decision Notice on Berwick Bank (issued 31 July 2025) determines **risk of AEoSI** in-combination on the razorbill population at Fowlsheugh SPA. The estimate for the Project contribution is now 6.21 - 10.49 breeding adult mortalities, although this is not considered to be realistic for the reasons discussed in **AIR** Appendix II: Additional Information on SeabORD.

3.6.37. The Scottish Ministers' Decision Notice on Berwick Bank (issued 31 July 2025) also determines **risk of AEoSI** in-combination on the razorbill population at Troup, Pennan and Lion's Heads SPA. The estimate for the Project contribution is now 2.57 - 4.35 breeding adult razorbill mortalities, although this is not considered to be realistic for the reasons discussed in **AIR** Appendix II: Additional Information on SeabORD.

PUFFIN

3.6.38. Table 3.16 presents the in-combination scenarios modelled under PVA for puffin in relation to updated estimates of distributional responses. Note that the column with productivity rate is retained for information relating to the SeabORD model outputs presented in the RIAA. The AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.16 Puffin In-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	In-combination Adult Mortality Estimates	Predicted Reduction in		
			Adult Survival Rate	Immature Survival Rate	Productivity Rate
Coquet Island	*Upper*	*21.61*	*0.0004316*	*0.0004824*	*0*
	Lower	*13.70*	*0.0002737*	*0.0002898*	*0*
	Upper	**25.04**	**0.0005001**	**0.0005982**	**0**
	Lower	**14.65**	**0.0002926**	**0.0003593**	**0**
Farne Islands	*Upper*	*60.32*	*0.0006894*	*0.0011922*	*0.0000183*
	Lower	*37.92*	*0.0004333*	*0.0007160*	*0.0000183*
	Upper	**68.77**	**0.0007859**	**0.0013951**	**0**
	Lower	**41.31**	**0.0004721**	**0.0008378**	**0**
Forth Islands	*Upper*	*291.13*	*0.0032243*	*0.0038919*	*0.0001285*
	Lower	178.80	0.0019802	0.0023356	0.0001285
	Upper	**295.63**	**0.0032742**	**0.0042607**	**0**
	Lower	**177.42**	**0.001965**	**0.0025569**	**0**
North Caithness Cliffs	*Upper*	*51.27*	*0.0094287*	*0.0104566*	*0*
	Lower	*31.48*	*0.0057896*	*0.0062740*	*0*
	Upper	**50.76**	**0.0083191**	**0.0098849**	**0**
	Lower	**31.25**	**0.0051213**	**0.0059358**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.39. Table 3.17 presents the outputs from the updated PVAs undertaken for these in-combination impacts on puffin. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.17 Puffin In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA Output at 35 Years		Conclusions
		CPS	CGR	
Coquet Island	*Upper*	*0.981* *0.944 - 1.019*	*0.999* *0.998 - 1.000*	*No AEoSI.*
	Lower	*0.988* *0.951 - 1.026*	*1.000* *0.999 - 1.001*	
	Upper	**0.977** **0.941 - 1.015**	**0.999** **0.998 - 1.000**	**No AEoSI.**
	Lower	**0.987** **0.949 - 1.023**	**1.000** **0.999 - 1.001**	
Farne Islands	*Upper*	*0.967* *0.927 - 1.007*	*0.999* *0.998 - 1.000*	No AEoSI.
	Lower	*0.979* *0.939 - 1.020*	*0.999* *0.998 - 1.001*	
	Upper	**0.961** **0.921 - 1.001**	**0.999** **0.998 - 1.000**	No **AEoSI**.
	Lower	**0.977** **0.936 - 1.017**	**0.999** **0.998 - 1.000**	
Forth Islands	*Upper*	*0.864* *0.839 - 0.887*	*0.996* *0.995 - 0.997*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (10.20 puffin mortalities).*
	Lower	*0.914* *0.889 - 0.940*	*0.998* *0.997 - 0.998*	
	Upper	**0.913** **0.887 - 0.937**	**0.996** **0.995 - 0.996**	**Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (6.58 – 10.97 breeding adult mortalities).**
	Lower	**0.996** **0.995 - 0.996**	**0.997** **0.997 - 0.998**	
North Caithness Cliffs	*Upper*	*0.660* *0.581 - 0.742*	*0.989* *0.985 - 0.992*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.39 puffin mortalities).*
	Lower	*0.778* *0.688 - 0.871*	*0.993* *0.990 - 0.996*	
	Upper	**0.687** **0.607 - 0.776**	**0.990** **0.986 - 0.993**	**Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.26 - 0.43 breeding adult mortalities)**
	Lower	**0.797** **0.702 - 0.895**	**0.994** **0.990 - 0.997**	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.40. For puffin at Coquet Island SPA, there is only a very small change in the counterfactual metrics between AIR and RIAA in-combination scenarios, therefore there is no change to the conclusion of **no AEOSI.**

3.6.41. For the puffin population at Farne Islands SPA, there is only a very small change in the counterfactual metrics between AIR and RIAA in-combination scenarios, therefore there is no change to the conclusion of **no AEOSI.**

3.6.42. The Scottish Ministers' Decision Notice on Berwick Bank (issued 31 July 2025) determines **risk of AEoSI** in-combination on Forth Islands puffin population. In this regard, the estimated Project contribution is now 6.58 - 10.97 breeding adult puffin mortalities (compared to 10.20 in the RIAA) and is therefore still judged as non-material for the reasons set out in the RIAA.

3.6.43. Scottish Ministers have already determined there to be **risk of AEoSI** from in-combination offshore wind impacts on the kittiwake population at Fowlsheugh SPA. As concluded in the RIAA, the Project may make a material contribution, and the updated impact estimate is 6.81 - 8.70 breeding adult mortalities (compared to 4.95).

3.6.44. For puffin at North Caithness Cliffs SPA, the very small change in counterfactual metrics means that the conclusion is the same: potential **risk of AEoSI** from in-combination impacts, but a non-material Project contribution, which remains a fraction <0.5 of a bird.

KITTIWAKE

3.6.45. Table 3.18 presents the in-combination scenarios modelled under PVA, the predicted mortalities arising from collision risk and distributional responses, and the resulting impacts on survival rate for input into the PVA. Note that the column with productivity rate is retained for information relating to the SeabORD model outputs presented in the RIAA. The AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.18 Kittiwake in-combination PVA Inputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario	Adult Mortality Estimates	Predicted Reduction in		
			Adult Survival Rate	Immature Survival Rate	Productivity Rate
Buchan Ness to Collieston	*Upper*	*112.74*	*0.0041609*	*0.0014576*	*0.0009448*
	Lower	*87.37*	*0.0032246*	*0.0011124*	*0.0009448*
	Upper	**125.20**	**0.004621**	**0.0018407**	**0**
	Lower	**92.67**	**0.0034205**	**0.0012785**	**0**
Cape Wrath	*Upper*	*5.21*	*0.0007186*	*0.0007026*	*0*
	Lower	*3.83*	*0.0005282*	*0.0005012*	*0*
	Upper	**N/A**	**N/A**	**N/A**	**N/A**
	Lower	**N/A**	**N/A**	**N/A**	**N/A**
East Caithness Cliffs	*Upper*	*402.01*	*0.0082114*	*0.0022716*	*0.0002206*
	Lower	*265.12*	*0.0054153*	*0.0015581*	*0.0002206*
	Upper	**465.54**	**0.0095089**	**0.0044708**	**0**
	Lower	**302.60**	**0.0061808**	**0.0023933**	**0**
Farne Islands	*Upper*	*47.39*	*0.0066136*	*0.0013201*	*0*
	Lower	*35.58*	*0.0049647*	*0.0009237*	*0*
	Upper	**55.45**	**0.0077385**	**0.0025116**	**0**
	Lower	**41.47**	**0.0057877**	**0.0013791**	**0**
Forth Islands	*Upper*	*83.43*	*0.0062997*	*0.0008793*	*0.0001208*
	Lower	*59.68*	*0.0045060*	*0.0006326*	*0.0001208*

SPA Population	Scenario	Adult Mortality Estimates	Predicted Reduction in		
			Adult Survival Rate	Immature Survival Rate	Productivity Rate
	Upper	**95.80**	**0.0069883**	**0.0027976**	**0**
	Lower	**67.93**	**0.0049557**	**0.0012946**	**0**
Fowlsheugh	*Upper*	*245.53*	*0.0079290*	*0.0011847*	*0.0009042*
	Lower	*185.98*	*0.0060058*	*0.0008936*	*0.0009042*
	Upper	**290.72**	**0.0072397**	**0.0025438**	**0**
	Lower	**218.63**	**0.0054446**	**0.0012957**	**0**
North Caithness Cliffs	*Upper*	*73.54*	*0.0066005*	*0.0024156*	*0*
	Lower	*52.71*	*0.0047309*	*0.0016803*	*0*
	Upper	**85.09**	**0.0051811**	**0.0021265**	**0**
	Lower	**60.40**	**0.0036776**	**0.0013875**	**0**
St Abb's Head to Fast Castle	*Upper*	*328.79*	*0.0359016*	*0.0019027*	*0.0006987*
	Lower	*258.07*	*0.0281797*	*0.0014001*	*0.0006987*
	Upper	**390.95**	**0.0426897**	**0.0123518**	**0**
	Lower	**307.29**	**0.0335545**	**0.0050505**	**0**
Troup, Pennan and Lion's Heads	*Upper*	*115.95*	*0.0042404*	*0.0014950*	*0.0005998*
	Lower	*81.54*	*0.0029819*	*0.0010727*	*0.0005998*
	Upper	**129.69**	**0.004743**	**0.002149**	**0**
	Lower	**87.70**	**0.0032071**	**0.0013444**	**0**
West Westray	*Upper*	*67.33*	*0.0139168*	*0.0058295*	*0*
	Lower	*46.41*	*0.0095936*	*0.0040138*	*0*
	Upper	**77.58**	**0.0160349**	**0.006794**	**0**
	Lower	**52.84**	**0.0109225**	**0.0046008**	**0**

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.46. Table 3.19 presents the outputs from the updated PVAs undertaken for these in-combination impacts on kittiwake. AIR updates are presented in **bold**, with the RIAA figures noted in *italics*.

Table 3.19 Kittiwake In-combination PVA Outputs. RIAA Figures in Italics, Shaded Grey.

SPA Population	Scenario*	PVA Outputs at 35 years		Conclusion
		CPS	CGR	
Buchan Ness to Collieston Coast	*Upper*	*0.875* *0.850 - 0.898*	*0.996* *0.996 - 0.997*	*Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (13.91 kittiwake mortalities).*
	Lower	*0.900* *0.875 - 0.924*	*0.997* *0.996 - 0.998*	
	Upper	**0.866** **0.842 - 0.890**	**0.996** **0.995 - 0.997**	**Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (9.36 – 11.95 breeding adult mortalities).**
	Lower	**0.901** **0.876 - 0.925**	**0.997** **0.996 - 0.998**	
Cape Wrath	*Upper*	*0.971* *0.918 - 1.024*	*0.999* *0.998 - 1.000*	*No AEOSI*
	Lower	*0.978* *0.928 - 1.033*	*0.999* *0.998 - 1.001*	
	Upper	**N/A**	**N/A**	**No AEOSI**
	Lower	**N/A**	**N/A**	
East Caithness Cliffs	*Upper*	*0.788* *0.771 - 0.806*	*0.993* *0.993 - 0.994*	*Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (7.22 kittiwake mortalities)*
	Lower	*0.853* *0.835 - 0.871*	*0.996* *0.995 - 0.996*	
	Upper	**0.734** **0.718 - 0.750**	**0.991** **0.991 - 0.992**	**Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (3.30 - 4.31 breeding adult mortalities)**
	Lower	**0.826** **0.809 - 0.843**	**0.995** **0.994 - 0.995**	
Farne Islands	*Upper*	*0.835* *0.792 - 0.881*	*0.995* *0.994 - 0.996*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.60 kittiwake mortalities)*
	Lower	*0.874* *0.829 - 0.922*	*0.996* *0.995 - 0.998*	
	Upper	**0.795** **0.753 - 0.839**	**0.994** **0.992 - 0.995**	**Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.44 – 0.58 breeding adult mortalities)**
	Lower	**0.851** **0.806 - 0.899**	**0.996** **0.994 - 0.997**	
Forth Islands	*Upper*	*0.848* *0.814 - 0.882*	*0.995* *0.994 - 0.996*	*Potential risk of AEoSI from in-combination impacts but the Project may make a material contribution (1.81 kittiwake mortalities)*
	Lower	*0.888* *0.853 - 0.924*	*0.997* *0.996 - 0.998*	
	Upper	**0.804** **0.774 - 0.836**	**0.994** **0.993 - 0.995**	**Potential risk of AEoSI from in-combination**

SPA Population	Scenario*	PVA Outputs at 35 years		Conclusion
		CPS	CGR	
	Lower	**0.869** **0.836 - 0.902**	**0.996** **0.995 - 0.997**	**impacts and the Project may make a material contribution (0.87 - 1.12 breeding adult mortalities).**
Fowlsheugh	*Upper*	*0.805* *0.783 - 0.827*	*0.994* *0.993 - 0.995*	*Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (4.95 kittiwake mortalities)*
	Lower	*0.847* *0.825 - 0.869*	*0.995* *0.995 - 0.996*	
	Upper	**0.804** **0.785 - 0.822**	**0.994** **0.993 - 0.994**	**Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (6.81 - 8.70 kittiwake mortalities).**
	Lower	**0.859** **0.838 - 0.878**	**0.996** **0.995 - 0.996**	
North Caithness Cliffs	*Upper*	*0.817* *0.782 - 0.855*	*0.994* *0.993 - 0.995*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.82 kittiwake mortalities)*
	Lower	*0.867* *0.828 - 0.906*	*0.996* *0.995 - 0.997*	
	Upper	**0.850** **0.819 - 0.882**	**0.996** **0.995 - 0.996**	**Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.79 - 1.04 breeding adult mortalities)**
	Lower	**0.893** **0.862 - 0.927**	**0.997** **0.996 - 0.998**	
St Abb's Head to Fast Castle	*Upper*	*0.414* *0.388 - 0.439*	*0.976* *0.974 - 0.977*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.62 kittiwake mortalities)*
	Lower	*0.501* *0.471 - 0.529*	*0.981* *0.979 - 0.982*	
	Upper	**0.287** **0.269 - 0.305**	**0.966** **0.964 - 0.967**	**Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.64 - 0.82 breeding adult mortalities)**
	Lower	**0.413** **0.388 - 0.438**	**0.976** **0.974 - 0.977**	
Troup, Pennan and Lion's Heads	*Upper*	*0.875* *0.851 - 0.899*	*0.996* *0.996 - 0.997*	*Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (9.35 kittiwake mortalities)*
	Lower	*0.909* *0.884 - 0.933*	*0.997* *0.997 - 0.998*	
	Upper	**0.859** **0.836 - 0.882**	**0.996** **0.995 - 0.996**	**Potential risk of AEoSI from in-combination impacts and the Project may make a material contribution (4.81 - 6.16 kittiwake mortalities)**
	Lower	**0.904** **0.880 - 0.929**	**0.997** **0.997 - 0.998**	
West Westray	*Upper*	*0.644* *0.602 - 0.689*	*0.988* *0.986 - 0.989*	*Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.50 kittiwake mortalities)*
	Lower	*0.740* *0.691 - 0.789*	*0.992* *0.990 - 0.993*	

SPA Population	Scenario*	PVA Outputs at 35 years		Conclusion
		CPS	CGR	
	Upper	0.602 0.561 - 0.645	0.986 0.984 - 0.988	Potential risk of AEoSI from in-combination impacts but the Project does not make a material contribution (0.36 - 0.49 breeding adult mortalities)
	Lower	0.708 0.661 - 0.758	0.990 0.989 - 0.992	

** Upper = 60% / 3%, Lower = 60% / 1% displacement and mortality matrix rates. All scenarios include GV and BB predicted impacts.*

3.6.47. Scottish Ministers have already determined **risk of AEoSI** in-combination on the Buchan Ness to Collieston Coast SPA kittiwake population. As concluded in the RIAA, the Project may make a material contribution, but this is now lower: 9.36 - 11.95 breeding adult mortalities (compared to 13.91 in the RIAA).

3.6.48. NatureScot have already provisionally concluded **no AEoSI** for kittiwake at Cape Wrath SPA, so no further PVA was required.

3.6.49. Scottish Ministers have already determined **risk of AEoSI** in-combination on the East Caithness Cliffs SPA kittiwake population. As concluded in the RIAA, the Project may make a material contribution, but this is now lower: 3.30 - 4.31 breeding adult mortalities (compared to 7.22 in the RIAA).

3.6.50. As concluded in the RIAA, there may be **risk of AEoSI** in-combination on the Farne Islands SPA kittiwake population. In this regard, the updated Project contribution is lower: 0.44 - 0.58 breeding adult mortalities (compared to 0.60 in the RIAA) and is judged to be non-material.

3.6.51. The Scottish Ministers' Decision Notice on Berwick Bank (issued 31 July 2025) determines **risk of AEoSI** in-combination on the Forth Islands' kittiwake population. However, the updated Project contribution is now lower: 0.87 - 1.12 breeding adult mortalities (compared to 1.81 in the RIAA) and is therefore judged to remain non-material.

3.6.52. Scottish Ministers have already determined there to be **risk of AEoSI** from in-combination offshore wind impacts on the kittiwake population at Fowlsheugh SPA. As concluded in the RIAA, the Project may make a material contribution, and the updated impact estimate is 6.81 - 8.70 breeding adult mortalities (compared to 4.95).

3.6.53. As concluded in the RIAA, there may be **risk of AEoSI** from in-combination offshore wind impacts on the North Caithness Cliffs SPA kittiwake population. In this regard, the updated Project contribution is similar to that presented in the RIAA: 0.79 - 1.04 breeding adult mortalities (compared to 0.82) and is therefore judged to remain non-material.

3.6.54. The Scottish Ministers' Decision Notice on Berwick Bank (issued 31 July 2025) determines **risk of AEoSI** in-combination on the St Abbs to Fast Castle SPA kittiwake population. The updated Project contribution is similar to that presented in the RIAA: 0.64 - 0.82 breeding adult mortalities (compared to 0.62) and is therefore judged to remain non-material.

3.6.55. Scottish Ministers have already determined there to be **risk of AEoSI** from in-combination offshore wind impacts on the kittiwake population at Troup, Pennan and Lion's Heads SPA. As concluded in the RIAA, the Project may make a material contribution, but this is now lower: 4.81 - 6.16 breeding adult mortalities (compared to 9.35 in the RIAA).

3.6.56. For the West Westray kittiwake population, NatureScot advised **provisional AEoSI** in combination. In this regard, the updated Project contribution is similar to that presented in the RIAA: 0.36 - 0.49 breeding adult mortalities (compared to 0.50) and is therefore judged to remain non-material.

MUIR MHÒR
OFFSHORE WIND FARM

A joint venture between Fred. Olsen Seawind & Vattenfall

Muir Mhòr Offshore Wind Farm Ltd
120 Bath Street,
Glasgow,
G2 2EN
muirmhor.co.uk