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Application Document 13

Appendix 13-2 Caledonia North Habitats Regulations Appraisal Population Viability Assessment Technical Report

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Acronyms and Abbreviations

BDMPS	Biologically Defined Minimum Population Scale
BTO	British Trust for Ornithology
CPGR	Counterfactual Population Growth Rate
CPS	Counterfactual Population Size
EIA	Environmental Impact Assessment Report
HRA	Habitats Regulations Appraisal
JNCC	Joint Nature Conservation Committee
OWF	Offshore Wind Farm
PVA	Population Viability Analysis
SMP	Seabird Monitoring Programme
WTG	Wind Turbine Generator

1 Introduction

1.1 Overview

1.1.1.1 This appendix provides background information, sets out the methodology for, and presents the results of Population Viability Analysis (PVA) for the Proposed Development (Offshore), specifically Caledonia North, located in the Moray Firth, Scotland. This appendix supports the Report to Inform Appropriate Assessment (RIAA) (Application Document 13: Caledonia North Report to Inform Appropriate Assessment).

1.1.1.2 The Proposed Development (Offshore) will be developed in two phases (see Volume 1, Chapter 5: Proposed Development Phasing), referred to as Caledonia North and Caledonia South. The Array Areas of the two phases are referred to as the Caledonia North Site and the Caledonia South Site, with the combined Array Areas referred to as the Caledonia Offshore Wind Farm (OWF). It is assumed that construction of the two application areas could be progressed in either order (e.g., Caledonia North constructed in the first phase, then Caledonia South in the second phase, or vice-versa) or at the same time. This has been assessed within a RIAA covering Caledonia North and Caledonia South in isolation, as well as the Proposed Development (Offshore) (i.e., Caledonia North and Caledonia South combined) (Application Document 13).

1.1.1.3 PVA has been modelled separately for Caledonia North, Caledonia South and the Proposed Development (Offshore) where necessary to estimate the effect that the Proposed Development (Offshore) may have upon ornithological populations from the separate phases alone. The predicted mortalities for Caledonia North, Caledonia South and the Proposed Development (Offshore) have been presented as a worst-case scenario (i.e., with respect to collision risk, the largest number of the smallest Wind Turbine Generators (WTGs) considered within the design envelope). The Proposed Development (Offshore) worst-case scenario is based on the maximum number of WTGs (bottom-fixed and floating, 140 turbines) that could be constructed, rather than an addition of Caledonia North and Caledonia South, as to base the design on this assumption would overestimate potential impacts. The worst-case scenario for the Proposed Development (Offshore) is being progressed within the cumulative and in-combination assessments.

1.1.1.4 For more information on the project design scenarios, refer to Volume 1, Chapter 3: Proposed Development Description (Offshore) and Volume 1, Chapter 5: Proposed Development Phasing.

1.2 Population Viability Analysis (PVA)

1.2.1.1 For breeding seabirds, distributional responses include both barrier effects and displacement (NatureScot, 2023[1]). The use of distributional responses within this appendix therefore includes habitat displacement effects as well as barrier effects.

1.2.1.2 The effects of OWF projects on a population can be estimated through the use of PVA modelling at an individual project level or in-combination. PVA provides a robust framework using demographic parameters to predict population changes and project these changes over a set period using statistical models. Different scenarios can be modelled to compare unimpacted 'baseline' scenarios that are assumed to follow a 'natural' growth rate, with 'impact' scenarios including development impacts by altering demographic parameters. Comparisons between the baseline and impacted models can indicate the level of impact that an OWF development will have on a population and how this may impact the conservation objectives of SPA colonies within the affected area.

1.2.1.3 The greatest potential risks that seabird populations face from OWFs are mortalities caused by turbine blade collisions or displacement and barrier effects associated with wind turbine presence. Cumulative effects resulting from negative individual level impacts can cause reductions in productivity or an increased baseline mortality within a population. The Habitats Regulations Appraisal (HRA) includes the assessment of these potential effects with respect to individual Special Protection Area (SPA) colonies and the wider population.

1.2.1.4 The PVA was undertaken using the PVA tool developed by UKCEH and BioSS under contract to Natural England and Joint Nature Conservation Committee (JNCC) (Searle *et al*., 2019[2]), which was accessed via the 'Shiny App' interface or online portal. PVA was modelled for bird species and populations that are qualifying features of the designated sites listed below. The guidance threshold recommended for use of PVA is a predicted change of 0.02% in the adult survival rate of each species scoped in for each designated site (NatureScot, 2023[1]).

Table 1-1: List of designated sites and receptors in scope for PVA.

Designated Sites	Species in scope
East Caithness Cliffs SPA	Guillemot, razorbill and kittiwake
North Caithness Cliffs SPA	Guillemot, razorbill and puffin
Troup, Pennan and Lion's Heads SPA	Guillemot, razorbill and kittiwake
Copinsay SPA	Guillemot
Hoy SPA	Guillemot and puffin
Marwick Head SPA	Guillemot
Calf of Eday SPA	Guillemot
West Westray SPA	Guillemot
Sule Skerry and Sule Stack SPA	Puffin
Rousay SPA	Guillemot
Fair Isle SPA	Puffin and gannet
Foula SPA	Puffin
Forth Islands SPA	Puffin and gannet
Hermaness, Saxa Vord and Vella Field SPA	Gannet
Buchan Ness SPA	Kittiwake

2 Methodology

2.1.1.1 This section sets out the PVA process conducted for the HRA for the Proposed Development (Offshore), Caledonia North and Caledonia South.

2.1.1.2 The results from the Environmental Impact Assessment (EIA) assessing collision risk impact were apportioned for potential effects in accordance with NatureScot Guidance (NatureScot, 2018[3]) and the impacts were assessed within the RIAA. A detailed methodology can be found in the apportionment annex (Application Document 13, Appendix 13-1: Caledonia North Apportioning Technical Note). Scenarios were modelled where impacts exceeded the threshold for assessment (0.02 percentage point change in adult survival rate). This is the standard guidance threshold for PVA assessment (NatureScot, 2023[1]). Five receptors were found to qualify for further assessment through PVA due to increases in baseline mortality rates due to the predicted mortalities attributed to the Proposed Development (Offshore) alone during specific seasons or annually, with a single receptor found to qualify for further assessment through PVA due to the predicted mortalities attributed to Caledonia North and Caledonia South alone annually.

2.1.1.3 The PVA was conducted using the Seabird PVA tool interfaced through the online 'Shiny App' which is a user-friendly online platform. The PVA tool developed by Natural England (Searle *et al*., 2019[2]) uses functions within the nepva R package to carry out the modelling and analysis.

2.2 Modelling Approach

2.2.1.1 All PVA models were undertaken using the 'Simulation' run type. Simulation runs are used to simulate population trajectories based on the specified demographic parameters, initial population sizes and scenarios.

2.2.1.2 A deterministic model translates the demographic parameters provided into actual numbers and provides a simplistic model, which can be used to generate average trends. Due to the lack of stochasticity, a deterministic model will produce the same result every time the simulation is run. In situations where little is known about how the population size has varied, or how the scale of impact may vary, running a deterministic model may provide a more practical assessment of the population and how it may be impacted.

2.2.1.3 A stochastic model produces probabilistic outputs to account for the impact of environmental and demographic stochasticity. Environmental stochasticity describes the effects random variation in factors such as weather can have on a population and is modelled by the incorporation of randomly generated values for the probability of survival from one-time step to the next. Demographic stochasticity refers to the effect of random variation in population structure on demographic rates and is modelled by

generating random numbers of surviving individuals for any given survival probability. Demographic stochasticity can usually be ignored for populations greater than 100 individuals, however including demographic stochasticity will not cause any penalty when simulating larger populations (WWT Consulting, 2012[4]).

2.2.1.4 All PVA modelling in this report was undertaken with the Beta/Gamma model for environmental and demographic stochasticity. The number of simulations runs were set to 5,000 and were ran for the expected lifespan of the Proposed Development (Offshore), Caledonia North and Caledonia South (35 years). As per NatureScot guidance, outputs for 25 and 50 years are also presented.

2.2.1.5 Additional "burn-in" time of ten years were included in each model which were then removed from the outputs. These dropped modelled years are often more variable in their estimates of population numbers due to potential initial population structure instability (i.e., an in balance of immature-matures). After several years, the modelled structure becomes stable which is the most appropriate time to take outputs. This is informed by internal model parameterisation developed during the burn-in period.

2.2.1.6 Demographic processes such as growth, survival, productivity and recruitment are density-dependent, as their rates change in relation to the number of individuals in a population. Density dependence can be described as either compensatory or depensatory (Begon *et al*., 2005[5]). Compensation is characterised by demographic changes that cause a stabilising effect on a populations long-term average. Depensation acts to further decrease the rate of population growth in declining populations and can delay the rate of recovery. This is typically exhibited in populations that have been significantly depleted in size and is caused by a reduction in the benefits associated with conspecific presence.

2.2.1.7 Density dependence is self-evident in the natural environment, as without it, populations would grow exponentially. For seabird populations, the mechanisms as to how this operates are largely uncertain, or where known this is evidently highly variable. If density dependence is mis-specified in a PVA, the modelled prediction may be unreliable. Therefore, it is more typical to use density independent models for seabird assessments, despite the lack of biologically realistic density dependence. As such, density independent models lack any means by which a population can recover once it has been reduced beyond a certain point, they are therefore appropriate for impact assessment purposes on the grounds of precaution (i.e., another source of precaution in the assessment process) (Ridge *et al*., 2019[6]). Conversely, this also means that population projections can trend in as exponential function with no effective carrying capacity. As the populations in this assessment show highly varying trends with some in decline or poor data status, it is deemed density dependent methods are

not appropriate for this assessment. Density independent models have therefore been used.

2.3 PVA Demographic Parameters

2.3.1.1 The option to use pre-set demographic parameters or custom values is available in the PVA Tool Shiny App. National or regional demographic parameters for each species within the tool were obtained from Horswill and Robinson (2015[7]).

2.3.1.2 Where SPA-specific productivity rates were not available, the most relevant values from Horswill and Robinson (2015[7]) were used. For specific SPAs where breeding success and colony count data were available these were used to calculate average productivity rates (and associated standard deviations).

2.3.1.3 Survival rates vary between age classes, with 0-1 representing birds under the age of one year, class 1-2 representing birds under the age of two, class 2-3 includes birds at age two, etc. Adults are grouped as survival rates tend to be consistent at maturity despite actual age.

2.3.1.4 The age at first breeding and maximum brood size per pair parameters were selected from the pre-formulated values within the PVA Tool (Searle *et al*., 2019[2]).

2.3.1.5 Two scenarios of populations sizes were considered. Firstly, the designated citation count from the specific SPA documentation was used for assessment. Secondly, the most recent count information was extracted from the Seabird Monitoring Programme (SMP) online data base to allow assessment on the most recent population estimate. The populations value was then used to estimate the impact for each season on the individual SPAs, with any going above the threshold of 0.02% adult survival points change being assessed using PVA.

2.3.1.6 Additionally for gannet in Forth Islands, a third population count was assessed based on the Harris *et al*. (2021[8]) survey data which provided updated counts post-HPAI impacts.

Table 2-1: Summary of SPA demographic parameters selected for PVA species. Source: Horswill and Robinson (2015[7]) and SMP colony counts (asterisk refers to citation colony counts where SMP counts were not used).

Species	Colony	SMP Count of Colony Breeding Adults (Year)	Productivity Rate ± SD	Mean Adult Survival Rate + SD	Mean Immature Age Class (Survival Rate + SD)					
					0 – 1	1 – 2	2 – 3	3 – 4	4 – 5	5 - 6
Kittiwake	East Caithness Cliffs SPA	48,920 (2015)	0.690 ± 0.296	0.854 ± 0.051	0.790 ± <0.001	0.854 ± 0.051	0.854 ± 0.051	0.854 ± 0.051	0.854 ± 0.051	-
	Troup, Pennan and Lion's Heads SPA	27,344 (2023)								
	Buchan Ness to Collieston Coast SPA	27,094 (2023)								
Guillemot	East Caithness Cliffs SPA	199,992 (2016)	0.629 ± 0.174	0.939 ± 0.015	0.560 ± 0.001	0.792 ± 0.001	0.917 ± 0.001	0.917 ± 0.001	0.939 ± 0.001	0.939 ± 0.570
	North Caithness Cliffs SPA	62,599 (2023)								
	Troup, Pennan and Lion's Heads SPA	47,719 (2023)								
	Copinsay SPA	10,967 (2023)								
	Hoy SPA	16,345 (2017)								

Species	Colony	SMP Count of Colony Breeding Adults (Year)	Productivity Rate ± SD	Mean Adult Survival Rate + SD	Mean Immature Age Class (Survival Rate + SD)					
					0 – 1	1 – 2	2 – 3	3 – 4	4 – 5	5 - 6
	Marwick Head SPA	12,800 (2023)								
	Calf of Eday SPA	7,402 (2018)								
	West Westray SPA	40,673 (2023)								
	Rousay SPA	7,921 (2018)								
Razorbill	East Caithness Cliffs SPA	40,256 (2016)								
	North Caithness Cliffs SPA	13,384 (2023)	0.570 ± 0.247	0.895 ± 0.067	0.630 ± 0.209	0.630 ± 0.209	0.630 ± 0.209	0.895 ± 0.067	0.895 ± 0.067	-
	Troup, Pennan and Lion's Heads SPA	8,801 (2023)								
Gannet	Fair Isle SPA	2,332* (2015)	0.710 ± 0.049	0.919 ± 0.042	0.424 ± 0.045	0.829 ± 0.026	0.891 ± 0.019	0.895 ± 0.019	0.895 ± 0.042	-
	Forth Islands SPA	150,518 (2014)								

Species	Colony	SMP Count of Colony Breeding Adults (Year)	Productivity Rate ± SD	Mean Adult Survival Rate + SD	Mean Immature Age Class (Survival Rate + SD)					
					0 – 1	1 – 2	2 – 3	3 – 4	4 – 5	5 - 6
	Hermaness, Saxa Vord and Valla Field SPA	37,478 (2023)	0.700 ± 0.082							
Puffin	North Caithness Cliffs SPA	3,011 (2023)	0.617 ± 0.151	0.906 ± 0.083	0.709 ± 0.001	0.709 ± 0.001	0.709 ± 0.001	0.760 ± 0.001	0.805 ± 0.001	-
	Hoy SPA	361 (2017)								
	Sule Skerry and Sule Stack SPA	95,484 (2018)								
	Fair Isle SPA	6,666 (2015)	0.741 ± 0.145							
	Foula SPA	6,351 (2016)	0.617 ± 0.151							

2.4 Impacts Assessed

2.4.1.1 The impact predicted from the Proposed Development (Offshore), Caledonia North and Caledonia South were parameterised as 'relative harvest' (the increase in baseline mortality rate as a result of the impact rather than the overall impact in terms of numbers of birds annually), as per the PVA guidance.

2.4.1.2 Each PVA simulation run included a baseline scenario that was paired with an impact scenario. The baseline scenario estimated population changes based on the baseline mortality rate (Table 2-1), and the impact scenario estimated population change with the additional predicted mortality due to distributional responses, collision risk and combined distributional response and collision risk effects. The additional mortality was calculated as a proportion of the initial population and applied to the adult age class only.

2.4.1.3 For the species and relevant seasons in scope for assessment, a range of impact levels have been modelled based on the Guidance approach and Applicant approach shown in Table 2-2.

2.4.1.4 Each impact scenario includes additional predicted population-level mortality due to distributional responses, collision risk and combined distributional response and collision risk effects. This increased mortality affects the survival rate, thereby predicting the impact magnitude on the population under different scenarios. The model used relative harvest, calculated based on the predicted mortalities apportioned to the designated site and initial regional population size.

Table 2-2: Displacement and mortality rates used in the Matrix-based Method for the NatureScot Guidance Approach and the Applicant Approach.

Species	Displacement Rate	Mortality Rate – Breeding Season	Mortality Rate – Non-breeding Season
Guidance Approach			
Guillemot, Razorbill and Puffin	60%	3% and 5%	1% and 3%
Kittiwake	30%	1% and 3%	1% and 3%
Gannet	70%	1% and 3%	1% and 3%
Applicant Approach			
Guillemot and Razorbill	50%	1%	1%
Puffin	50%	1%	Not Assessed
Kittiwake	Not Assessed		
Gannet	70%	1%	1%

2.4.1.5 It should be noted as agreed in consultation, a macro-avoidance rate of 70% has been applied to gannet densities during the non-breeding season (October – early-March) used to estimate collision risk. During the breeding season (mid-March – September), the monthly in-flight densities have not been adjusted for macro-avoidance. This has been presented as the Guidance Approach. For the Applicant Approach a macro-avoidance rate of 70% has been applied to gannet densities in all months. For further details see Volume 2, Chapter 6: Offshore Ornithology.

2.4.1.6 For puffin, it should be noted the Applicant has decided to include the Year 1 August count (2,093 individuals) in the non-breeding season rather than during the breeding season. This is due to the Year 1 August abundance being considered to reflect migration rather than individuals present in the breeding season. The mean seasonal peaks for puffin have also been presented with the August count included in the breeding season as per the Guidance Approach. Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report.

3 Results

3.1 Introduction

3.1.1.1 The outputs from the PVA Tool including the counterfactual population size and growth rate are presented for the species and relevant seasons for each colony requiring PVA. Four sets of outputs are presented for each species, as follows:

- Caledonia North, Caledonia South and Caledonia OWF Alone Guidance Approach and Applicant Approach where relevant;
- In-combination impacts of the Caledonia OWF including all development sites for Guidance Approach and Applicant Approach;
- In-combination impacts of the Caledonia OWF including all development sites excluding Berwick Bank for Guidance Approach and Applicant Approach; and
- In-combination impacts for all consented sites including the Caledonia OWF for Guidance Approach and Applicant Approach.

3.2 East Caithness Cliffs SPA: Project Alone

3.2.1 Guillemot: Caledonia North

Table 3-1: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	50.61	0.00025	1.000 (<0.001)	0.029	0.992 (0.005)	0.756	1.000 (<0.001)	0.029	0.990 (0.005)	1.034
Guidance (60%, 5%)	SMP	Breeding	84.35	0.00042	1.000 (<0.001)	0.047	0.988 (0.005)	1.227	1.000 (<0.001)	0.047	0.983 (0.005)	1.695
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	53.04	0.00027	1.000 (<0.001)	0.030	0.992 (0.005)	0.770	1.000 (<0.001)	0.030	0.989 (0.005)	1.074
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	91.64	0.00046	0.999 (<0.001)	0.052	0.987 (0.005)	1.344	0.999 (<0.001)	0.051	0.981 (0.005)	1.856
Guidance (60%, 3%)	Citation	Breeding	50.61	0.00047	0.999 (<0.001)	0.054	0.986 (0.007)	1.385	0.999 (<0.001)	0.054	0.981 (0.007)	1.910
Guidance (60%, 5%)	Citation	Breeding	84.35	0.00079	0.999 (<0.001)	0.089	0.977 (0.007)	2.288	0.999 (<0.001)	0.089	0.968 (0.007)	3.158

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	53.04	0.00050	0.999 (<0.001)	0.056	0.986 (0.007)	1.443	0.999 (<0.001)	0.056	0.980 (0.007)	1.991
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	91.64	0.00086	0.999 (<0.001)	0.096	0.975 (0.007)	2.482	0.999 (<0.001)	0.096	0.966 (0.007)	3.422

3.2.2 Guillemot: Caledonia South

Table 3-2: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	79.37	0.00025	1.000 (<0.001)	0.045	0.988 (0.005)	1.156	1.000 (<0.001)	0.045	0.984 (0.005)	1.601
Guidance (60%, 5%)	SMP	Breeding	132.29	0.00042	0.999 (<0.001)	0.074	0.981 (0.005)	1.917	0.999 (<0.001)	0.074	0.974 (0.005)	2.644
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	89.19	0.00027	1.000 (<0.001)	0.050	0.987 (0.005)	1.289	0.999 (<0.001)	0.050	0.982 (0.005)	1.796
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	161.75	0.00046	0.999 (<0.001)	0.091	0.977 (0.005)	2.350	1.000 (<0.001)	0.091	0.968 (0.005)	3.236
Guidance (60%-3%)	Citation	Breeding	79.37	0.00074	0.999 (<0.001)	0.084	0.979 (0.007)	2.147	0.999 (<0.001)	0.084	0.971 (0.007)	2.948
Guidance (60%-5%)	Citation	Breeding	132.29	0.00123	0.999 (<0.001)	0.140	0.964 (0.007)	3.565	0.999 (<0.001)	0.140	0.951 (0.007)	4.910
Guidance (60%-3%)	Citation	Non-Breeding	29.46	0.00027	1.000 (<0.001)	0.031	0.992 (0.007)	0.785	1.000 (<0.001)	0.031	0.989 (0.007)	1.082

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%-3%; 60%-1%)	Citation	Annual Total	89.19	0.00084	0.999 (<0.001)	0.094	0.976 (0.007)	2.408	0.999 (<0.001)	0.094	0.967 (0.007)	3.318
Guidance (60%-5%; 60%-3%)	Citation	Annual Total	161.75	0.00151	0.998 (<0.001)	0.170	0.957 (0.007)	4.323	0.998 (<0.001)	0.170	0.941 (0.007)	5.944

3.2.3 Guillemot: Proposed Development (Offshore)

Table 3-3: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	112.80	0.00056	0.999 (<0.001)	0.063	0.984 (0.005)	1.641	0.999 (<0.001)	0.064	0.977 (0.005)	2.262
Guidance (60%, 5%)	SMP	Breeding	188.00	0.00094	0.999 (<0.001)	0.105	0.973 (0.005)	2.707	0.999 (<0.001)	0.105	0.963 (0.005)	3.733
Applicant (50%, 1%)	SMP	Annual Total	40.82	0.00020	1.000 (<0.001)	0.023	0.994 (0.005)	0.600	1.000 (<0.001)	0.023	0.992 (0.005)	0.826
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	124.19	0.00062	0.999 (<0.001)	0.070	0.982 (0.005)	1.804	0.999 (<0.001)	0.070	0.975 (0.005)	2.483
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	222.16	0.00111	0.999 (<0.001)	0.125	0.968 (0.005)	3.209	0.999 (<0.001)	0.125	0.956 (0.005)	4.417
Guidance (60%, 3%)	Citation	Breeding	112.80	0.00106	0.999 (<0.001)	0.119	0.970 (0.007)	3.049	0.999 (0.002)	0.119	0.958 (0.007)	4.191
Guidance (60%, 5%)	Citation	Breeding	188.00	0.00176	0.998 (<0.001)	0.198	0.950 (0.007)	5.025	0.998 (0.002)	0.198	0.931 (0.007)	6.901

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-Breeding	34.16	0.00032	1.000 (<0.001)	0.036	0.991 (0.007)	0.927	1.000 (0.002)	0.036	0.987 (0.007)	1.274
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	124.19	0.00116	0.999 (<0.001)	0.131	0.967 (0.007)	3.341	0.999 (0.002)	0.131	0.954 (0.007)	4.603
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	222.16	0.00208	0.998 (<0.001)	0.234	0.941 (0.007)	5.908	0.998 (0.002)	0.234	0.919 (0.007)	8.087

3.2.4 Razorbill: Caledonia North

Table 3-4: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	9.58	0.00024	1.000 (0.001)	0.030	0.991 (0.030)	0.865	1.000 (0.001)	0.030	0.988 (0.039)	1.185
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	10.68	0.00027	1.000 (0.001)	0.032	0.991 (0.031)	0.873	1.000 (0.001)	0.034	0.988 (0.040)	1.188
Guidance (60%, 3%)	Citation	Breeding	5.75	0.00036	1.000 (0.001)	0.043	0.988 (0.037)	1.203	1.000 (0.001)	0.042	0.984 (0.044)	1.551
Guidance (60%, 5%)	Citation	Breeding	9.58	0.00061	0.999 (0.001)	0.070	0.982 (0.037)	1.835	0.999 (0.001)	0.072	0.974 (0.044)	2.573
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.11	0.00039	1.000 (0.001)	0.047	0.988 (0.038)	1.197	1.000 (0.001)	0.048	0.983 (0.045)	1.715
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	10.68	0.00068	0.999 (0.001)	0.080	0.979 (0.038)	2.105	0.999 (0.001)	0.081	0.971 (0.045)	2.934

3.2.5 Razorbill: Caledonia South

Table 3-5: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	11.86	0.00029	1.000 (0.001)	0.036	0.990 (0.029)	0.951	1.000 (0.001)	0.036	0.988 (0.038)	1.247
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	12.47	0.00031	1.000 (0.001)	0.036	0.990 (0.029)	0.965	1.000 (0.001)	0.037	0.986 (0.037)	1.363
Guidance (60%, 3%)	Citation	Breeding	7.12	0.00045	0.999 (0.002)	0.058	0.986 (0.051)	1.435	0.999 (0.002)	0.057	0.981 (0.065)	1.941
Guidance (60%, 5%)	Citation	Breeding	11.86	0.00075	0.999 (0.002)	0.096	0.975 (0.051)	2.520	0.999 (0.002)	0.095	0.967 (0.065)	3.342
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	7.32	0.00046	0.999 (0.002)	0.055	0.985 (0.050)	1.468	0.999 (0.002)	0.056	0.980 (0.064)	2.022
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	12.47	0.00079	0.999 (0.002)	0.096	0.975 (0.050)	2.467	0.999 (0.002)	0.095	0.966 (0.064)	3.387

3.2.6 Razorbill: Proposed Development (Offshore)

Table 3-6: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.52	0.00029	1.000 (0.001)	0.033	0.992 (0.023)	0.839	1.000 (0.001)	0.033	0.988 (0.028)	1.180
Guidance (60%, 5%)	SMP	Breeding	19.19	0.00048	0.999 (0.001)	0.055	0.985 (0.023)	1.483	0.999 (0.001)	0.055	0.980 (0.028)	1.980
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	12.00	0.00030	1.000 (0.001)	0.032	0.992 (0.023)	0.845	1.000 (0.001)	0.033	0.989 (0.028)	1.145
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	20.66	0.00051	0.999 (0.001)	0.059	0.985 (0.023)	1.488	0.999 (0.001)	0.060	0.979 (0.028)	2.110
Guidance (60%, 3%)	Citation	Breeding	11.52	0.00073	0.991 (0.001)	0.865	0.798 (0.031)	20.166	0.991 (0.001)	0.864	0.733 (0.034)	26.742
Guidance (60%, 5%)	Citation	Breeding	19.19	0.00121	0.999 (0.001)	0.142	0.963 (0.036)	3.710	0.999 (0.001)	0.142	0.950 (0.043)	5.023
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	12.00	0.00076	0.999 (0.001)	0.094	0.976 (0.036)	2.405	0.999 (0.001)	0.092	0.967 (0.044)	3.267

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	20.66	0.00131	0.998 (0.001)	0.156	0.959 (0.036)	4.094	0.998 (0.001)	0.158	0.944 (0.043)	5.571

3.2.7 Kittiwake: Caledonia South

Table 3-7: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the East Caithness Cliffs SPA from Caledonia South alone.

Approach	Data Source	Season	Impact	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	Collision	10.51	0.00021	1.000 (0.001)	0.026	0.993 (0.017)	0.693	1.000 (<0.001)	0.026	0.991 (0.018)	0.934
Guidance	SMP	Annual total	Collision	10.96	0.00022	1.000 (0.001)	0.027	0.993 (0.017)	0.669	1.000 (<0.001)	0.025	0.991 (0.019)	0.927
Guidance (30%, 1%)	SMP	Breeding	Dist. and collision	11.74	0.00028	1.000 (0.001)	0.028	0.992 (0.017)	0.783	1.000 (<0.001)	0.029	0.989 (0.018)	1.072
Guidance (30%, 3%)	SMP	Breeding	Dist. and collision	13.71	0.00029	1.000 (0.001)	0.033	0.991 (0.017)	0.893	1.000 (<0.001)	0.033	0.988 (0.019)	1.207
Guidance (30%, 1%)	SMP	Annual Total	Dist. and collision	12.16	0.00032	1.000 (0.001)	0.029	0.992 (0.017)	0.793	1.000 (<0.001)	0.030	0.989 (0.019)	1.138
Guidance (30%, 3%)	SMP	Annual Total	Dist. and collision	14.68	0.00039	1.000 (0.001)	0.034	0.991 (0.017)	0.946	1.000 (<0.001)	0.035	0.987 (0.018)	1.266

Approach	Data Source	Season	Impact	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Breeding	Dist. and collision	11.63	0.00024	1.000 (<0.001)	0.026	0.991 (0.015)	0.647	1.000 (<0.001)	0.025	0.988 (0.016)	0.863
Guidance (30%, 3%)	Citation	Annual Total	Dist. and collision	14.55	0.00029	1.000 (<0.001)	0.026	0.993 (0.015)	0.665	1.000 (<0.001)	0.026	0.990 (0.016)	0.910

For formatting purposes distributional responses are shortened to Dist.

3.2.8 Kittiwake: Proposed Development (Offshore)

Table 3-8: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) alone.

Approach	Data Source	Season	Impact	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	Collision	15.65	0.00028	1.000 (0.001)	0.033	0.992 (0.017)	0.846	1.000 (<0.001)	0.033	0.988 (0.018)	1.152
Guidance	SMP	Annual Total	Collision	19.01	0.00029	1.000 (0.001)	0.034	0.991 (0.017)	0.903	1.000 (<0.001)	0.035	0.988 (0.018)	1.218
Guidance (30%, 1%)	SMP	Annual Total	Dist. and collision	13.70	0.00032	1.000 (0.001)	0.040	0.990 (0.017)	1.032	1.000 (<0.001)	0.039	0.986 (0.018)	1.402
Guidance (30%, 3%)	SMP	Annual Total	Dist. and collision	14.30	0.00039	1.000 (0.001)	0.046	0.988 (0.017)	1.203	1.000 (<0.001)	0.047	0.983 (0.018)	1.675
Guidance	Citation	Breeding	Collision	15.65	0.00021	1.000 (<0.001)	0.024	0.994 (0.015)	0.600	1.000 (<0.001)	0.024	0.992 (0.016)	0.870
Guidance	Citation	Annual Total	Collision	19.01	0.00022	1.000 (<0.001)	0.025	0.994 (0.015)	0.682	1.000 (<0.001)	0.025	0.991 (0.016)	0.922
Guidance (30%, 1%)	Citation	Annual Total	Dist. and collision	13.70	0.00024	1.000 (<0.001)	0.027	0.993 (0.015)	0.698	1.000 (<0.001)	0.028	0.990 (0.016)	0.991

Approach	Data Source	Season	Impact	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual Total	Dist. and collision	14.30	0.00029	1.000 (<0.001)	0.034	0.991 (0.015)	0.892	1.000 (<0.001)	0.034	0.988 (0.016)	1.230

For formatting purposes distributional responses are shortened to Dist.

3.3 East Caithness Cliffs SPA: In-combination

3.3.1 Guillemot

Table 3-9: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects	203.11	0.00102	0.999 (<0.001)	0.114	0.971 (0.005)	2.926	0.999 (<0.001)	0.114	0.960 (0.005)	4.027
Guidance (60%,3%)	SMP	Breeding	All Projects	731.20	0.00366	0.996 (<0.001)	0.411	0.898 (0.005)	10.159	0.996 (<0.001)	0.411	0.862 (0.005)	13.782
Guidance (60%,5%)	SMP	Breeding	All Projects	1,218.66	0.00609	0.993 (<0.001)	0.685	0.836 (0.004)	16.366	0.993 (<0.001)	0.685	0.781 (0.004)	21.920
Applicant (50%,1%)	SMP	Non-breeding	All Projects	142.13	0.00071	0.999 (<0.001)	0.080	0.979 (0.005)	2.065	0.999 (<0.001)	0.080	0.972 (0.005)	2.844
Guidance (60%,1%)	SMP	Non-breeding	All Projects	170.55	0.00085	0.999 (<0.001)	0.096	0.975 (0.005)	2.461	0.999 (<0.001)	0.096	0.966 (0.005)	3.395
Guidance (60%,3%)	SMP	Non-breeding	All Projects	511.66	0.00256	0.997 (<0.001)	0.287	0.928 (0.005)	7.216	0.997 (<0.001)	0.288	0.902 (0.005)	9.844
Applicant (50%,1%)	SMP	Annual total	All Projects	345.24	0.00173	0.998 (<0.001)	0.194	0.951 (0.005)	4.936	0.998 (<0.001)	0.194	0.932 (0.005)	6.765

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual total	All Projects	901.75	0.00451	0.995 (<0.001)	0.507	0.876 (0.005)	12.393	0.995 (<0.001)	0.507	0.833 (0.005)	16.725
Guidance (60%,5%; 60%, 3%)	SMP	Annual total	All Projects	1,730.32	0.00865	0.990 (<0.001)	0.973	0.776 (0.004)	22.447	0.990 (<0.001)	0.973	0.703 (0.004)	29.665
Applicant (50%,1%)	SMP	Breeding	All consented Projects plus Caledonia	202.67	0.00101	0.999 (<0.001)	0.114	0.971 (0.005)	2.915	0.999 (<0.001)	0.114	0.960 (0.005)	4.022
Guidance (60%,3%)	SMP	Breeding	All consented Projects plus Caledonia	729.62	0.00365	0.996 (<0.001)	0.410	0.899 (0.005)	10.144	0.996 (<0.001)	0.410	0.862 (0.005)	13.763
Guidance (60%,5%)	SMP	Breeding	All consented Projects plus Caledonia	1,216.03	0.00608	0.993 (<0.001)	0.684	0.837 (0.004)	16.341	0.993 (<0.001)	0.684	0.781 (0.004)	21.897
Applicant (50%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	141.87	0.00071	0.999 (<0.001)	0.080	0.979 (0.005)	2.052	0.999 (<0.001)	0.080	0.972 (0.005)	2.828
Guidance (60%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	170.24	0.00085	0.999 (<0.001)	0.096	0.975 (0.005)	2.467	0.999 (<0.001)	0.096	0.966 (0.005)	3.392
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	510.73	0.00255	0.997 (<0.001)	0.287	0.928 (0.005)	7.201	0.997 (<0.001)	0.287	0.902 (0.005)	9.838

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Annual total	All consented Projects plus Caledonia	344.54	0.00172	0.998 (<0.001)	0.194	0.951 (0.005)	4.920	0.998 (<0.001)	0.194	0.932 (0.005)	6.750
Guidance (60%,3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	899.86	0.00450	0.995 (<0.001)	0.506	0.876 (0.005)	12.367	0.995 (<0.001)	0.506	0.833 (0.005)	16.698
Guidance (60%,5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	1,726.76	0.00863	0.990 (<0.001)	0.971	0.776 (0.004)	22.410	0.990 (<0.001)	0.970	0.704 (0.004)	29.614
Applicant (50%,1%)	Citation	Breeding	All Projects	203.11	0.00190	0.998 (<0.001)	0.214	0.946 (0.007)	5.428	0.998 (<0.001)	0.214	0.926 (0.007)	7.434
Guidance (60%,3%)	Citation	Breeding	All Projects	731.20	0.00685	0.992 (<0.001)	0.770	0.818 (0.006)	18.210	0.992 (<0.001)	0.770	0.757 (0.006)	24.287
Guidance (60%,5%)	Citation	Breeding	All Projects	1,218.66	0.01142	0.987 (<0.001)	1.285	0.714 (0.005)	28.550	0.987 (<0.001)	1.284	0.628 (0.005)	37.207
Applicant (50%,1%)	Citation	Non-breeding	All Projects	142.13	0.00133	0.998 (<0.001)	0.150	0.962 (0.007)	3.823	0.999 (<0.001)	0.150	0.948 (0.007)	5.245
Guidance (60%,1%)	Citation	Non-breeding	All Projects	170.55	0.00160	0.998 (<0.001)	0.180	0.954 (0.007)	4.573	0.998 (<0.001)	0.180	0.937 (0.007)	6.280
Guidance (60%,3%)	Citation	Non-breeding	All Projects	511.66	0.00480	0.995 (<0.001)	0.540	0.869 (0.006)	13.105	0.995 (<0.001)	0.539	0.823 (0.006)	17.674
Applicant (50%,1%)	Citation	Annual Total	All Projects	345.24	0.00324	0.996 (<0.001)	0.364	0.909 (0.007	9.052	0.996 (<0.001)	0.364	0.877 (0.007)	12.299

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects	901.75	0.00845	0.990 (<0.001)	0.951	0.780 (0.006)	21.980	0.990 (<0.001)	0.950	0.709 (0.006)	29.078
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	1,730.32	0.01622	0.982 (<0.001)	1.824	0.620 (0.005)	38.024	0.982 (<0.001)	1.823	0.516 (0.004)	48.440
Applicant (50%,1%)	Citation	Breeding	All consented Projects plus Caledonia	202.67	0.00190	0.998 (<0.001)	0.213	0.946 (0.007)	5.392	0.998 (<0.001)	0.213	0.926 (0.007)	7.394
Guidance (60%,3%)	Citation	Breeding	All consented Projects plus Caledonia	729.62	0.00684	0.992 (<0.001)	0.769	0.818 (0.006)	18.186	0.992 (<0.001)	0.769	0.757 (0.006)	24.259
Guidance (60%,5%)	Citation	Breeding	All consented Projects plus Caledonia	1,216.03	0.01140	0.987 (<0.001)	1.282	0.715 (0.005)	28.483	0.987 (<0.001)	1.281	0.629 (0.005)	37.131
Applicant (50%,1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	141.87	0.00133	0.999 (<0.001)	0.150	0.962 (0.007)	3.809	0.999 (<0.001)	0.150	0.948 (0.007)	5.244
Guidance (60%,1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	170.24	0.00160	0.998 (<0.001)	0.179	0.954 (0.007)	4.566	0.998 (<0.001)	0.180	0.937 (0.007)	6.257
Guidance (60%,3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	510.73	0.00479	0.995 (<0.001)	0.539	0.869 (0.006)	13.088	0.995 (<0.001)	0.538	0.824 (0.006)	17.641

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	Citation	Annual total	All consented Projects plus Caledonia	344.54	0.00323	0.996 (<0.001)	0.363	0.910 (0.006)	9.001	0.996 (<0.001)	0.363	0.878 (0.007)	12.249
Guidance (60%,3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	899.86	0.00843	0.991 (<0.001)	0.948	0.781 (0.006)	21.936	0.991 (<0.001)	0.948	0.710 (0.005)	29.017
Guidance (60%,5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	1,726.76	0.01618	0.982 (<0.001)	1.819	0.620 (0.005)	37.966	0.982 (<0.001)	1.819	0.516 (0.004)	48.370

3.3.2 Razorbill

Table 3-10: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	27.29	0.00068	0.999 (0.001)	0.082	0.979 (0.031)	2.149	0.999 (0.001)	0.082	0.971 (0.040)	2.881
Guidance (60%, 3%)	SMP	Breeding	All Projects	98.25	0.00244	0.997 (0.001)	0.293	0.926 (0.029)	7.353	0.997 (0.001)	0.290	0.900 (0.037)	9.985
Guidance (60%, 5%)	SMP	Breeding	All Projects	163.75	0.00407	0.995 (0.001)	0.488	0.880 (0.028)	11.983	0.995 (0.001)	0.488	0.839 (0.035)	16.099
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	33.16	0.00082	0.999 (0.001)	0.097	0.975 (0.031)	2.508	0.999 (0.001)	0.098	0.965 (0.039)	3.451
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	39.79	0.00099	0.999 (0.001)	0.119	0.969 (0.030)	3.087	0.999 (0.001)	0.118	0.959 (0.038)	4.109
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	119.37	0.00297	0.996 (0.001)	0.354	0.911 (0.029)	8.861	0.996 (0.001)	0.354	0.880 (0.036)	12.019
Applicant (50%, 1%)	SMP	Annual total	All Projects	60.45	0.00150	0.998 (0.001)	0.183	0.953 (0.030)	4.693	0.998 (0.001)	0.181	0.936 (0.039)	6.361
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects	138.04	0.00343	0.996 (0.001)	0.411	0.898 (0.028)	10.180	0.996 (0.001)	0.411	0.862 (0.036)	13.830

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects	283.12	0.00703	0.992 (0.001)	0.845	0.802 (0.026)	19.792	0.992 (0.001)	0.843	0.737 (0.031)	26.305
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	27.04	0.00067	0.999 (<0.001)	0.082	0.979 (0.010)	2.106	0.999 (<0.001)	0.082	0.971 (0.013)	2.883
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	97.35	0.00242	0.997 (<0.001)	0.289	0.927 (0.009)	7.282	0.997 (<0.001)	0.291	0.901 (0.012)	9.937
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	162.25	0.00403	0.995 (<0.001)	0.484	0.882 (0.009)	11.847	0.995 (<0.001)	0.484	0.840 (0.011)	16.042
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	29.47	0.00073	0.999 (<0.001)	0.089	0.977 (0.010)	2.288	0.999 (<0.001)	0.088	0.969 (0.012)	3.141
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	35.37	0.00088	0.999 (<0.001)	0.106	0.973 (0.009)	2.723	0.999 (<0.001)	0.106	0.963 (0.012)	3.736
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	106.10	0.00264	0.997 (<0.001)	0.317	0.921 (0.009)	7.917	0.997 (<0.001)	0.317	0.892 (0.012)	10.796
Applicant (50%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	56.51	0.00140	0.998 (<0.001)	0.168	0.957 (0.009)	4.282	0.998 (<0.001)	0.168	0.941 (0.012)	5.904

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	132.71	0.00330	0.996 (<0.001)	0.396	0.902 (0.009)	9.798	0.996 (<0.001)	0.396	0.867(0.011)	13.313
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	268.34	0.00667	0.992 (<0.001)	0.799	0.812 (0.009)	18.830	0.992 (<0.001)	0.800	0.749 (0.010)	25.101
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	26.87	0.00067	0.999 (0.001)	0.081	0.979 (0.030)	2.065	0.999 (0.001)	0.077	0.972 (0.040)	2.819
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	96.72	0.00240	0.997 (0.001)	0.290	0.927 (0.029)	7.272	0.997 (0.001)	0.286	0.902 (0.037)	9.848
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	161.19	0.00400	0.995 (0.001)	0.479	0.882 (0.028)	11.827	0.995 (0.001)	0.481	0.840 (0.035)	15.994
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	21.25	0.00053	0.999 (0.001)	0.065	0.983 (0.030)	1.671	0.999 (0.001)	0.062	0.978 (0.040)	2.197
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	25.50	0.00063	0.999 (0.001)	0.076	0.980 (0.030)	1.992	0.999 (0.001)	0.074	0.973 (0.039)	2.674
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	76.49	0.00190	0.998 (0.001)	0.229	0.942 (0.030)	5.840	0.998 (0.001)	0.228	0.921 (0.038)	7.875

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	48.11	0.00120	0.999 (0.001)	0.145	0.963 (0.030)	3.747	0.999 (0.001)	0.145	0.949 (0.038)	5.136
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	122.21	0.00303	0.996 (0.001)	0.366	0.908 (0.029)	9.160	0.996 (0.001)	0.368	0.876 (0.037)	12.369
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	237.68	0.00590	0.993 (0.001)	0.711	0.830 (0.026)	16.952	0.993 (0.001)	0.709	0.774 (0.033)	22.612
Applicant (50%, 1%)	Citation	Breeding	All Projects	27.29	0.00068	0.998 (0.002)	0.210	0.947 (0.047)	5.332	0.998 (0.002)	0.209	0.927 (0.060)	7.273
Guidance (60%, 3%)	Citation	Breeding	All Projects	98.25	0.00244	0.993 (0.002)	0.743	0.823 (0.042)	17.678	0.993 (0.002)	0.744	0.764 (0.051)	23.588
Guidance (60%, 5%)	Citation	Breeding	All Projects	163.75	0.00407	0.988 (0.002)	1.246	0.723 (0.038)	27.745	0.988 (0.002)	1.241	0.638 (0.044)	36.228
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	33.16	0.00082	0.997 (0.002)	0.255	0.935 (0.046)	6.455	0.997 (0.002)	0.256	0.912 (0.058)	8.826
Guidance (60%, 1%)	Citation	Non-breeding	All Projects	39.79	0.00099	0.997 (0.002)	0.301	0.925 (0.045)	7.523	0.997 (0.002)	0.298	0.897 (0.058)	10.297
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	119.37	0.00297	0.991 (0.002)	0.903	0.790 (0.040)	20.956	0.991 (0.002)	0.904	0.721 (0.048)	27.889
Applicant (50%, 1%)	Citation	Annual total	All Projects	60.45	0.00150	0.995 (0.002)	0.457	0.888 (0.044)	11.196	0.995 (0.002)	0.454	0.848 (0.055)	15.183

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	138.04	0.00343	0.990 (0.002)	1.046	0.761 (0.039)	23.917	0.990 (0.002)	1.042	0.686 (0.047)	31.378
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	283.12	0.00703	0.979 (0.002)	2.142	0.570 (0.031)	43.039	0.979 (0.002)	2.141	0.458 (0.035)	54.160
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	27.04	0.00170	0.998 (0.001)	0.205	0.947 (0.036)	5.269	0.998 (0.001)	0.202	0.929 (0.042)	7.112
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	97.35	0.00612	0.993 (0.001)	0.732	0.826 (0.032)	17.422	0.993 (0.001)	0.730	0.767 (0.036)	23.242
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	162.25	0.01020	0.988 (0.001)	1.215	0.727 (0.029)	27.257	0.988 (0.001)	1.216	0.643 (0.031)	34.661
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	29.47	0.00134	0.998 (0.001)	0.224	0.943 (0.035)	5.651	0.998 (0.001)	0.223	0.923 (0.042)	7.679
Guidance (60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	35.37	0.00161	0.997 (0.001)	0.264	0.933 (0.035)	6.680	0.997 (0.001)	0.265	0.908 (0.041)	9.166
Guidance (60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	106.10	0.00484	0.992 (0.001)	0.793	0.813 (0.031)	18.733	0.813 (0.001)	0.795	0.750 (0.035)	24.973

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	56.51	0.00305	0.996 (0.001)	0.424	0.895 (0.034)	10.477	0.895 (0.001)	0.424	0.858 (0.040)	14.202
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	132.71	0.00773	0.990 (0.001)	0.995	0.771 (0.030)	22.925	0.771 (0.001)	0.994	0.698 (0.033)	30.216
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	268.34	0.01504	0.980 (0.001)	2.008	0.590 (0.024)	41.036	0.590 (0.001)	2.011	0.481 (0.025)	51.872
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	26.87	0.00067	0.998 (0.002)	0.204	0.948 (0.047)	5.174	0.998 (0.002)	0.206	0.928 (0.061)	7.156
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	96.72	0.00240	0.993 (0.002)	0.735	0.824 (0.042)	17.574	0.993 (0.002)	0.740	0.766 (0.052)	23.434
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	161.19	0.00400	0.988 (0.002)	1.221	0.726 (0.038)	27.376	0.988 (0.002)	1.227	0.642 (0.045)	35.834
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	21.25	0.000528	0.998 (0.002)	0.162	0.959 (0.048)	4.110	0.998 (0.002)	0.163	0.944 (0.062)	5.578
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	25.50	0.00063	0.998 (0.002)	0.194	0.951 (0.047)	4.908	0.998 (0.002)	0.197	0.933 (0.061)	6.710

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	76.49	0.00190	0.994 (0.002)	0.586	0.859 (0.043)	14.125	0.994 (0.002)	0.586	0.810 (0.053)	19.020
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	48.11	0.00120	0.996 (0.002)	0.365	0.909 (0.046)	9.063	0.996 (0.002)	0.366	0.876 (0.058)	12.366
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	122.21	0.00304	0.991 (0.002)	0.932	0.784 (0.040)	21.555	0.991 (0.002)	0.929	0.715 (0.050)	28.491
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	237.68	0.00590	0.982 (0.002)	1.806	0.622 (0.035)	37.760	0.982 (0.002)	1.809	0.518 (0.039)	48.153

3.3.3 Kittiwake

Table 3-11: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	113.71	0.00232	0.997 (0.001)	0.275	0.931 (0.016)	6.929	0.997 (<0.001)	0.275	0.906 (0.017)	9.437
Guidance (30%, 3%)	SMP	Breeding	All Projects	185.23	0.00379	0.996 (0.001)	0.449	0.890 (0.015)	11.023	0.996 (<0.001)	0.447	0.851 (0.016)	14.887
Guidance (30%, 1%)	SMP	Non-Breeding	All Projects	140.87	0.00288	0.997 (0.001)	0.340	0.915 (0.016)	8.514	0.997 (<0.001)	0.341	0.884 (0.017)	11.567
Guidance (30%, 3%)	SMP	Non-Breeding	All Projects	157.08	0.00321	0.996 (0.001)	0.381	0.905 (0.015)	9.486	0.996 (<0.001)	0.380	0.872 (0.016)	12.840
Guidance (30%, 1%)	SMP	Annual total	All Projects	254.58	0.00520	0.994 (0.001)	0.616	0.852 (0.015)	14.823	0.994 (<0.001)	0.615	0.801 (0.015)	19.879
Guidance (30%, 3%)	SMP	Annual total	All Projects	342.30	0.00700	0.992 (0.001)	0.828	0.805 (0.014)	19.455	0.992 (<0.001)	0.827	0.742 (0.014)	25.847
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	113.34	0.00232	0.997 (0.001)	0.274	0.931 (0.016)	6.890	0.997 (<0.001)	0.273	0.906 (0.017)	9.396
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	184.75	0.00378	0.996 (0.001)	0.447	0.890 (0.015)	10.978	0.996 (<0.001)	0.446	0.851 (0.016)	14.855

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	119.58	0.00244	0.997 (0.001)	0.289	0.928 (0.016)	7.235	0.997 (<0.001)	0.289	0.901 (0.017)	9.859
Guidance (30%, 3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	125.49	0.00257	0.997 (0.001)	0.304	0.924 (0.016)	7.586	0.997 (<0.001)	0.303	0.897 (0.017)	10.349
Guidance (30%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	232.92	0.00476	0.994 (0.001)	0.564	0.863 (0.016)	13.664	0.994 (<0.001)	0.563	0.816 (0.015)	18.389
Guidance (30%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	310.24	0.00634	0.992 (0.001)	0.751	0.822 (0.014)	17.804	0.993 (<0.001)	0.750	0.763 (0.014)	23.716
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	107.26	0.00219	0.997 (0.001)	0.259	0.935	6.511 (0.016)	0.997 (<0.001)	0.259	0.911 (0.017)	8.897
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	175.60	0.00359	0.996 (0.001)	0.425	0.895 (0.015)	10.475	0.996 (<0.001)	0.425	0.858 (0.016)	14.163
Guidance (30%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	97.70	0.00200	0.998 (0.001)	0.237	0.940	6.018 (0.016)	0.998 (<0.001)	0.236	0.918 (0.017)	8.183
Guidance (30%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	102.20	0.00209	0.998 (0.001)	0.249	0.937 (0.016)	6.263	0.998 (<0.001)	0.247	0.915 (0.017)	8.535

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	204.96	0.00419	0.995 (0.001)	0.496	0.879 (0.015)	12.143	0.995 (<0.001)	0.496	0.836 (0.016)	16.405
Guidance (30%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	277.80	0.00568	0.993 (0.001)	0.672	0.839 (0.014)	16.093	0.993 (<0.001)	0.672	0.784 (0.015)	21.563
Guidance (30%, 1%)	Citation	Breeding	All Projects	113.71	0.00175	0.998 (<0.001)	0.206	0.948 (0.014)	5.229	0.998 (<0.001)	0.206	0.929 (0.015)	7.140
Guidance (30%, 3%)	Citation	Breeding	All Projects	185.23	0.00285	0.997 (<0.001)	0.336	0.916 (0.014)	8.361	0.997 (<0.001)	0.336	0.886 (0.015)	11.388
Guidance (30%, 1%)	Citation	Non-Breeding	All Projects	140.87	0.00217	0.997 (<0.001)	0.255	0.936 (0.014)	6.448	0.997 (<0.001)	0.255	0.912 (0.015)	8.775
Guidance (30%, 3%)	Citation	Non-Breeding	All Projects	157.08	0.00242	0.997 (<0.001)	0.285	0.929 (0.014)	7.136	0.997 (<0.001)	0.285	0.902 (0.015)	9.770
Guidance (30%, 1%)	Citation	Annual total	All Projects	254.58	0.00392	0.995 (<0.001)	0.462	0.887 (0.014)	11.342	0.995 (<0.001)	0.463	0.846 (0.014)	15.352
Guidance (30%, 3%)	Citation	Annual total	All Projects	342.30	0.00527	0.994 (<0.001)	0.623	0.850 (0.013)	14.996	0.994 (<0.001)	0.623	0.798 (0.013)	20.157
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	113.34	0.00174	0.998 (<0.001)	0.206	0.948 (0.014)	5.200	0.998 (<0.001)	0.206	0.929 (0.015)	7.091

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	184.75	0.00284	0.997 (<0.001)	0.334	0.916 (0.014)	8.359	0.997 (<0.001)	0.334	0.886 (0.014)	11.355
Guidance (30%, 1%)	Citation	Non-Breeding	All Projects excluding Berwick Bank	119.58	0.00184	0.998 (<0.001)	0.215	0.945 (0.014)	5.457	0.998 (<0.001)	0.216	0.925 (0.015)	7.489
Guidance (30%, 3%)	Citation	Non-Breeding	All Projects excluding Berwick Bank	125.49	0.00193	0.998 (<0.001)	0.228	0.943 (0.014)	5.746	0.998 (<0.001)	0.228	0.921 (0.015)	7.888
Guidance (30%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	232.92	0.00358	0.996 (<0.001)	0.423	0.896 (0.014)	10.410	0.996 (<0.001)	0.423	0.859 (0.014)	14.132
Guidance (30%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	310.24	0.00477	0.994 (<0.001)	0.564	0.863 (0.013)	13.658	0.994 (<0.001)	0.564	0.816 (0.014)	18.416
Guidance (30%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	107.26	0.00165	0.998 (<0.001)	0.194	0.951 (0.014)	4.925	0.998 (<0.001)	0.194	0.932 (0.015)	6.752
Guidance (30%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	175.60	0.00270	0.997 (<0.001)	0.318	0.920 (0.014)	7.971	0.997 (<0.001)	0.319	0.891 (0.015)	10.883
Guidance (30%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	97.70	0.00150	0.998 (<0.001)	0.178	0.955 (0.014)	4.509	0.998 (<0.001)	0.177	0.938 (0.015)	6.181

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	102.20	0.00157	0.998 (<0.001)	0.186	0.953 (0.014)	4.704	0.998 (<0.001)	0.186	0.935 (0.015)	6.484
Guidance (30%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	204.96	0.00315	0.996 (<0.001)	0.372	0.908 (0.014)	9.185	0.996 (<0.001)	0.373	0.875 (0.015)	12.526
Guidance (30%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	277.80	0.00427	0.995 (<0.001)	0.505	0.876 (0.013)	12.353	0.995 (<0.001)	0.505	0.833 (0.014)	16.681

3.4 North Caithness Cliffs SPA: Project alone

3.4.1 Guillemot: Caledonia North

Table 3-12: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	9.40	0.00025	1.000 (<0.001)	0.028	1.000 (0.012)	0.718	1.000 (<0.001)	0.028	1.000 (0.012)	1.005
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.40	0.00017	1.000 (<0.001)	0.019	1.000 (0.012)	0.509	1.000 (<0.001)	0.020	1.000 (0.012)	0.714
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	11.68	0.00031	1.000 (<0.001)	0.034	1.000 (0.011)	0.868	1.000 (<0.001)	0.034	1.000 (0.012)	1.229

3.4.2 Guillemot: Caledonia South

Table 3-13: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	8.84	0.00014	1.000 (<0.001)	0.016	0.996 (0.009)	0.401	1.000 (<0.001)	0.016	0.994 (0.010)	0.564
Guidance (60%, 5%)	SMP	Breeding	14.74	0.00024	1.000 (<0.001)	0.026	0.993 (0.010)	0.681	1.000 (<0.001)	0.026	0.990 (0.010)	0.957
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	11.92	0.00019	1.000 (<0.001)	0.021	0.995 (0.010)	0.545	1.000 (<0.001)	0.022	0.993 (0.010)	0.744
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	23.96	0.00038	1.000 (<0.001)	0.043	0.989 (0.009)	1.097	1.000 (<0.001)	0.043	0.985 (0.009)	1.528
Guidance (60%, 3%)	Citation	Breeding	8.84	0.00023	1.000 (<0.001)	0.026	0.993 (0.012)	0.682	1.000 (<0.001)	0.026	0.990 (0.012)	0.967
Guidance (60%, 5%)	Citation	Breeding	14.74	0.00038	1.000 (<0.001)	0.043	0.988 (0.012)	1.170	1.000 (<0.001)	0.043	0.984 (0.012)	1.584
Guidance (60%, 3%)	Citation	Non breeding	9.22	0.00024	1.000 (<0.001)	0.027	0.993 (0.012)	0.735	1.000 (<0.001)	0.275	0.990 (0.012)	1.034
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	11.92	0.00031	1.000 (<0.001)	0.035	0.991 (0.012)	0.943	1.000 (<0.001)	0.036	0.987 (0.012)	1.308

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	23.96	0.00063	0.999 (<0.001)	0.071	0.982 (0.012)	1.813	0.999 (<0.001)	0.071	0.975 (0.012)	2.523

3.4.3 Guillemot: Proposed Development (Offshore)

Table 3-14: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	12.57	0.00020	1.000 (<0.001)	0.021	0.994 (0.009)	0.021	1.000 (<0.001)	0.022	0.992 (0.010)	0.793
Guidance (60%, 5%)	SMP	Breeding	20.95	0.00033	1.000 (<0.001)	0.037	0.990 (0.009)	0.037	1.000 (<0.001)	0.037	0.987 (0.009)	1.340
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	38.87	0.00062	0.999 (<0.001)	0.069	0.982 (0.009)	0.069	0.999 (<0.001)	0.069	0.975 (0.009)	2.475
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	69.54	0.00111	0.999 (<0.001)	0.124	0.968 (0.009)	0.124	0.999 (<0.001)	0.124	0.956 (0.009)	4.374
Guidance (60%, 3%)	Citation	Breeding	12.57	0.00033	1.000 (<0.001)	0.037	0.990 (0.012)	0.978	1.000 (<0.001)	0.037	0.986 (0.012)	1.351
Guidance (60%, 5%)	Citation	Breeding	20.95	0.00055	0.999 (<0.001)	0.062	0.984 (0.012)	1.633	0.999 (<0.001)	0.062	0.978 (0.012)	2.245
Guidance (60%, 3%)	Citation	Non-Breeding	10.69	0.00028	1.000 (<0.001)	0.031	0.992 (0.012)	0.816	1.000 (<0.001)	0.031	0.988 (0.012)	1.163
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	38.87	0.00116	0.999 (<0.001)	0.131	0.966 (0.011)	3.392	0.999 (<0.001)	0.132	0.953 (0.012)	4.655

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	69.54	0.00208	0.998 (<0.001)	0.234	0.941 (0.011)	5.896	0.998 (<0.001)	0.235	0.919 (0.012)	8.105

3.4.4 Razorbill: Caledonia North

Table 3-15: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	0.88	0.00022	1.000 (0.004)	0.024	0.992 (0.104)	0.831	1.000 (0.004)	0.026	0.987 (0.135)	1.296
Guidance (60%, 5%)	Citation	Breeding	1.47	0.00039	1.000 (0.004)	0.035	0.989 (0.103)	1.054	1.000 (0.004)	0.043	0.986 (0.136)	1.441
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	0.93	0.00023	1.000 (0.003)	0.038	0.990 (0.102)	0.998	1.000 (0.003)	0.028	0.988 (0.132)	1.168
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.62	0.00040	1.000 (0.004)	0.050	0.987 (0.104)	1.252	1.000 (0.004)	0.049	0.983 (0.132)	1.679

3.4.5 Razorbill: Caledonia South

Table 3-16: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	1.10	0.00027	1.000 (0.004)	0.034	0.991 (0.100)	0.889	1.000 (0.004)	0.024	0.992 (0.130)	0.802
Guidance (60%, 5%)	Citation	Breeding	1.83	0.00046	1.000 (0.004)	0.062	0.984 (0.100)	1.628	1.000 (0.004)	0.051	0.992 (0.130)	1.809
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	1.12	0.00028	1.000 (0.004)	0.039	0.990 (0.100)	1.012	1.000 (0.003)	0.042	0.988 (0.130)	1.204
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.91	0.00048	1.000 (0.004)	0.057	0.986 (0.100)	1.423	1.000 (0.003)	0.053	0.981 (0.130)	1.883

3.4.6 Razorbill: Proposed Development (Offshore)

Table 3-17: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	2.95	0.00044	1.000 (0.001)	0.023	0.994 (0.040)	0.632	1.000 (0.001)	0.023	0.991 (0.047)	0.879
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	1.84	0.00074	1.000 (0.001)	0.011	0.996 (0.041)	0.372	1.000 (0.001)	0.013	0.995 (0.048)	0.520
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	3.14	0.00046	1.000 (0.001)	0.025	0.993 (0.040)	0.679	1.000 (0.001)	0.025	0.991 (0.047)	0.879
Guidance (60%, 3%)	Citation	Breeding	1.77	0.00044	0.999 (0.003)	0.052	0.986 (0.075)	1.395	0.999 (0.002)	0.052	0.981 (0.090)	1.877
Guidance (60%, 5%)	Citation	Breeding	2.95	0.00074	0.999 (0.003)	0.088	0.978 (0.075)	2.206	0.999 (0.002)	0.087	0.971 (0.089)	2.950
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	1.84	0.00046	0.999 (0.003)	0.054	0.988 (0.076)	1.211	0.999 (0.002)	0.055	0.983 (0.091)	1.729
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	3.14	0.00079	0.999 (0.003)	0.094	0.976 (0.073)	2.384	0.999 (0.002)	0.087	0.968 (0.087)	3.230

3.4.7 Puffin: Caledonia North

Table 3-18: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.62	0.02079	0.975 (0.003)	2.47	0.523 (0.044)	47.73	0.975 (0.003)	2.45	0.409 (0.042)	59.14
Guidance (60%, 5%)	SMP	Breeding	1.03	0.00035	1.000 (0.003)	0.04	0.990 (0.073)	0.99	1.000 (0.002)	0.05	0.984 (0.087)	1.59
Guidance (60%-3%; 60%, 1%)	SMP	Annual total	0.63	0.02079	0.975 (0.003)	2.46	0.523 (0.044)	47.69	0.975 (0.003)	2.46	0.408 (0.042)	59.18
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	1.05	0.00035	1.000 (0.003)	0.04	0.990 (0.074)	0.95	1.000 (0.002)	0.04	0.987 (0.087)	1.29
Guidance (60%, 5%)	Citation	Breeding	1.03	0.00025	1.000 (0.002)	0.022	0.993 (0.072)	0.750	1.000 (0.002)	0.028	0.989 (0.085)	1.076
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.05	0.00025	1.000 (0.002)	0.030	0.991 (0.071)	0.856	1.000 (0.002)	0.025	0.988 (0.082)	1.172

3.4.8 Puffin: Caledonia South

Table 3-19: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	0.95	0.00032	1.000 (0.003)	0.037	0.990 (0.073)	1.065	1.000 (0.002)	0.037	0.986 (0.087)	1.389
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	0.97	0.00032	1.000 (0.003)	0.045	0.988 (0.074)	1.172	1.000 (0.002)	0.044	0.984 (0.087)	1.622
Guidance (60%, 5%)	Citation	Breeding	0.95	0.00023	1.000 (0.002)	0.023	0.993 (0.072)	0.719	1.000 (0.002)	0.024	0.991 (0.083)	0.886
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	0.97	0.00023	1.000 (0.002)	0.022	0.993 (0.071)	0.716	1.000 (0.002)	0.024	0.991 (0.084)	0.831

3.4.9 Puffin: Proposed Development (Offshore)

Table 3-20: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.98	0.00032	1.000 (0.003)	0.039	0.990 (0.094)	0.973	1.000 (0.003)	0.037	0.985 (0.113)	1.544
Guidance (60%, 5%)	SMP	Breeding	1.63	0.00054	0.999 (0.003)	0.070	0.982 (0.094)	1.808	0.999 (0.003)	0.067	0.976 (0.113)	2.371
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	0.99	0.00033	1.000 (0.003)	0.046	0.989 (0.096)	1.144	1.000 (0.003)	0.041	0.984 (0.117)	1.574
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	1.66	0.00055	0.999 (0.003)	0.067	0.982 (0.093)	1.836	0.999 (0.003)	0.064	0.976 (0.112)	2.370
Guidance (60%, 3%)	Citation	Breeding	0.98	0.00023	1.000 (0.003)	0.027	0.994 (0.081)	0.645	1.000 (0.003)	0.021	0.992 (0.097)	0.814
Guidance (60%, 5%)	Citation	Breeding	1.63	0.00039	1.000 (0.003)	0.047	0.987 (0.081)	1.297	1.000 (0.003)	0.046	0.986(0.097)	1.396
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	0.99	0.00024	1.000 (0.003)	0.021	0.994 (0.080)	0.599	1.000 (0.003)	0.023	0.991 (0.096)	0.947
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.66	0.00040	1.000 (0.003)	0.045	0.988 (0.081)	1.224	1.000 (0.003)	0.042	0.984 (0.098)	1.602

3.5 North Caithness Cliffs SPA: In-combination

3.5.1 Guillemot

Table 3-21: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects	14.94	0.00023	1.000 (<0.001)	0.027	0.993 (0.009)	0.699	1.000 (<0.001)	0.028	0.990 (0.009)	0.989
Guidance (60%,3%)	SMP	Breeding	All Projects	53.77	0.00086	0.999 (<0.001)	0.097	0.975 (0.008)	2.504	0.999 (<0.001)	0.097	0.965 (0.009)	3.454
Guidance (60%,5%)	SMP	Breeding	All Projects	89.62	0.00143	0.998 (<0.001)	0.161	0.959 (0.008)	4.107	0.998 (<0.001)	0.161	0.944 (0.009)	5.645
Applicant (50%,1%)	SMP	Non-breeding	All Projects	12.25	0.00020	1.000 (<0.001)	0.022	0.994 (0.009)	0.573	1.000 (<0.001)	0.022	0.992 (0.009)	0.818
Guidance (60%,1%)	SMP	Non-breeding	All Projects	14.70	0.00023	1.000 (<0.001)	0.027	0.993 (0.009)	0.673	1.000 (<0.001)	0.027	0.991 (0.009)	0.946
Guidance (60%,3%)	SMP	Non-breeding	All Projects	44.10	0.00070	0.999 (<0.001)	0.079	0.980 (0.008)	2.029	0.999 (<0.001)	0.079	0.972 (0.009)	2.805
Applicant (50%,1%)	SMP	Annual Total	All Projects	27.19	0.00043	0.999 (<0.001)	0.050	0.987 (0.009)	1.278	1.000 (<0.001)	0.050	0.983 (0.009)	1.746

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	68.47	0.00109	0.999 (<0.001)	0.123	0.969 (0.008)	3.145	0.999 (<0.001)	0.124	0.956 (0.009)	4.358
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	133.72	0.00213	0.998 (<0.001)	0.240	0.939 (0.008)	6.059	0.998 (<0.001)	0.240	0.917 (0.009)	8.299
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	14.42	0.000230	1.000 (<0.001)	0.026	0.993 (0.009)	0.664	1.000 (<0.001)	0.026	0.991 (0.009)	0.942
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	51.90	0.00083	0.999 (<0.001)	0.094	0.976 (0.008)	2.418	0.999 (<0.001)	0.094	0.967 (0.009)	3.323
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	86.49	0.00138	0.998 (<0.001)	0.156	0.960 (0.008)	3.981	0.998 (<0.001)	0.156	0.945 (0.009)	5.460
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	11.94	0.00019	1.000 (<0.001)	0.021	0.995 (0.009)	0.550	1.000 (<0.001)	0.022	0.992 (0.009)	0.768
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	14.33	0.00022	1.000 (<0.001)	0.026	0.993 (0.009)	0.670	1.000 (<0.001)	0.026	0.991 (0.009)	0.947
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	42.99	0.00069	0.999 (<0.001)	0.078	0.980 (0.009)	1.975	0.999 (<0.001)	0.078	0.973 (0.009)	2.750

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	26.36	0.00042	1.000 (<0.001)	0.047	0.988 (0.009)	1.231	1.000 (<0.001)	0.047	0.983 (0.009)	1.701
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	66.23	0.00106	0.999 (<0.001)	0.119	0.970 (0.009)	3.040	0.999 (<0.001)	0.119	0.958 (0.009)	4.195
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	129.48	0.00207	0.998 (<0.001)	0.233	0.941 (0.008)	5.874	0.998 (<0.001)	0.233	0.920 (0.009)	8.047
Applicant (50%, 1%)	Citation	Breeding	All Projects	14.94	0.00039	1.000 (<0.001)	0.044	0.988 (0.012)	1.163	1.000 (<0.001)	0.044	0.984 (0.007)	1.581
Guidance (60%, 3%)	Citation	Breeding	All Projects	53.77	0.00140	0.998 (<0.001)	0.158	0.960 (0.011)	4.017	0.998 (<0.001)	0.158	0.945 (0.007)	5.517
Guidance (60%, 5%)	Citation	Breeding	All Projects	89.62	0.00234	0.997 (<0.001)	0.262	0.934 (0.011)	6.642	0.997 (<0.001)	0.263	0.909 (0.007)	9.066
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	12.25	0.00032	1.000 (<0.001)	0.037	0.990 (0.012)	0.962	1.000 (<0.001)	0.036	0.987 (0.007)	1.276
Guidance (60%, 1%)	Citation	Non-breeding	All Projects	14.70	0.00038	1.000 (<0.001)	0.043	0.989 (0.012)	1.113	1.000 (<0.001)	0.044	0.985 (0.007)	1.546
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	44.10	0.00115	0.999 (<0.001)	0.130	0.966 (0.012)	3.353	0.999 (<0.001)	0.130	0.954 (0.007)	4.570

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Annual total	All Projects	27.19	0.00071	0.999 (<0.001)	0.080	0.979 (0.012)	2.082	0.999 (<0.001)	0.080	0.972 (0.007)	2.829
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	68.47	0.00179	0.998 (<0.001)	0.201	0.949 (0.011)	5.100	0.998 (<0.001)	0.201	0.930 (0.007)	6.980
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	133.72	0.00349	0.996 (<0.001)	0.393	0.903 (0.011)	9.737	0.996 (<0.001)	0.393	0.868 (0.007)	1.581
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	14.42	0.00038	1.000 (<0.001)	0.044	0.989 (0.012)	1.133	1.000 (<0.001)	0.043	0.984 (0.012)	1.556
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	51.90	0.00135	0.998 (<0.001)	0.153	0.961 (0.011)	3.873	0.998 (<0.001)	0.153	0.947 (0.012)	5.340
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	86.49	0.00226	0.997 (<0.001)	0.255	0.936 (0.011)	6.402	0.997 (<0.001)	0.254	0.913 (0.012)	8.745
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	11.94	0.00031	1.000 (<0.001)	0.036	0.991 (0.012)	0.928	1.000 (<0.001)	0.036	0.987 (0.012)	1.266
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	14.33	0.00037	1.000 (<0.001)	0.041	0.989 (0.012)	1.050	1.000 (<0.001)	0.042	0.985 (0.012)	1.491

Approach	Data Source	Season	In-combination Scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	42.99	0.00112	0.999 (<0.001)	0.127	0.968 (0.012)	3.222	0.999 (<0.001)	0.127	0.955 (0.012)	4.468
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	26.36	0.00069	0.999 (<0.001)	0.077	0.980 (0.012)	2.010	0.999 (<0.001)	0.078	0.972 (0.012)	2.792
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	66.23	0.00173	0.998 (<0.001)	0.194	0.951 (0.011)	4.931	0.998 (<0.001)	0.195	0.932 (0.012)	6.799
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	129.48	0.00338	0.996 (<0.001)	0.380	0.905 (0.011)	9.455	0.996 (<0.001)	0.380	0.872 (0.011)	12.835

3.5.2 Razorbill

Table 3-22: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	1.96	0.00015	1.000 (0.002)	0.018	0.996 (0.044)	0.429	1.000 (0.002)	0.018	0.994 (0.059)	0.644
Guidance (60%, 3%)	SMP	Breeding	All Projects	7.07	0.00053	0.999 (0.002)	0.063	0.983 (0.045)	1.700	0.999 (0.002)	0.067	0.977 (0.059)	2.300
Guidance (60%, 5%)	SMP	Breeding	All Projects	11.78	0.00088	0.999 (0.002)	0.106	0.972 (0.044)	2.790	0.999 (0.002)	0.109	0.961 (0.057)	3.874
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	4.33	0.00032	1.000 (0.002)	0.042	0.989 (0.044)	1.093	1.000 (0.002)	0.043	0.985 (0.058)	1.539
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	5.20	0.00039	1.000 (0.002)	0.050	0.987 (0.044)	1.316	0.999 (0.002)	0.051	0.983 (0.058)	1.745
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	15.59	0.00117	0.999 (0.002)	0.140	0.964 (0.043)	3.591	0.999 (0.002)	0.141	0.951 (0.056)	4.916
Applicant (50%, 1%)	SMP	Annual total	All Projects	6.30	0.00047	0.999 (0.002)	0.059	0.985 (0.044)	1.450	0.999 (0.002)	0.057	0.980 (0.058)	2.047
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects	12.27	0.00092	0.999 (0.002)	0.112	0.971 (0.043)	2.871	0.999 (0.002)	0.108	0.961 (0.056)	3.916
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects	27.38	0.00205	0.998 (0.002)	0.247	0.937 (0.042)	6.281	0.998 (0.002)	0.247	0.915 (0.055)	8.491

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	1.96	0.00015	1.000 (0.002)	0.018	0.996 (0.044)	0.429	1.000 (0.002)	0.018	0.994 (0.059)	0.644
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	7.07	0.00053	0.999 (0.002)	0.063	0.983 (0.045)	1.700	0.999 (0.002)	0.067	0.977 (0.059)	2.300
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	11.78	0.00088	0.999 (0.002)	0.106	0.972 (0.044)	2.790	0.999 (0.002)	0.109	0.961 (0.057)	3.874
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.85	0.00029	1.000 (0.002)	0.032	0.991 (0.044)	0.873	1.000 (0.002)	0.036	0.986 (0.057)	1.398
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.62	0.00035	1.000 (0.002)	0.042	0.989 (0.045)	1.117	1.000 (0.002)	0.041	0.984 (0.059)	1.551
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.87	0.00104	0.999 (0.002)	0.131	0.967 (0.043)	3.278	0.999 (0.002)	0.125	0.956 (0.056)	4.397
Applicant (50%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	5.82	0.00044	0.999 (0.002)	0.057	0.986 (0.043)	1.370	0.999 (0.002)	0.054	0.981 (0.056)	1.926
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	11.69	0.00087	0.999 (0.002)	0.107	0.972 (0.043)	2.767	0.999 (0.002)	0.108	0.961 (0.057)	3.881

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	25.66	0.00192	0.998 (0.002)	0.231	0.942 (0.042)	5.799	0.998 (0.002)	0.231	0.921 (0.055)	7.923
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	1.86	0.00014	1.000 (0.002)	0.021	0.996 (0.044)	0.432	1.000 (0.002)	0.021	0.993 (0.058)	0.688
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	6.71	0.00050	0.999 (0.002)	0.063	0.984 (0.044)	1.636	0.999 (0.002)	0.061	0.978 (0.057)	2.237
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	11.19	0.00084	0.999 (0.002)	0.099	0.974 (0.043)	2.576	0.999 (0.002)	0.101	0.963 (0.056)	3.665
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.78	0.00021	1.000 (0.002)	0.027	0.993 (0.044)	0.710	1.000 (0.002)	0.026	0.991 (0.057)	0.870
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.33	0.00025	1.000 (0.002)	0.031	0.992 (0.043)	0.783	1.000 (0.002)	0.027	0.990 (0.057)	0.985
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	9.99	0.00075	0.999 (0.002)	0.089	0.977 (0.044)	2.296	0.999 (0.002)	0.092	0.968 (0.058)	3.232
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	4.64	0.00035	1.000 (0.002)	0.042	0.989 (0.043)	1.133	1.000 (0.002)	0.041	0.986 (0.057)	1.446
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	10.04	0.00075	0.999 (0.002)	0.094	0.976 (0.043)	2.421	0.999 (0.002)	0.0.96	0.966 (0.056)	3.403

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	21.18	0.00158	0.998 (0.002)	0.197	0.950 (0.043)	5.011	0.998 (0.002)	0.197	0.932 (0.056)	6.830
Applicant (50%, 1%)	Citation	Breeding	All Projects	1.96	0.00049	0.999 (0.004)	0.061	0.984 (0.099)	1.553	0.999 (0.004)	0.061	0.980 (0.130)	2.024
Guidance (60%, 3%)	Citation	Breeding	All Projects	7.07	0.00177	0.998 (0.004)	0.221	0.943 (0.096)	5.661	0.998 (0.004)	0.215	0.925 (0.130)	7.540
Guidance (60%, 5%)	Citation	Breeding	All Projects	11.78	0.00295	0.996 (0.004)	0.354	0.912 (0.095)	8.756	0.996 (0.004)	0.354	0.879 (0.120)	12.134
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	4.33	0.00108	0.999 (0.004)	0.130	0.966 (0.097)	3.410	0.999 (0.004)	0.134	0.953 (0.130)	4.748
Guidance (60%, 1%)	Citation	Non-breeding	All Projects	5.20	0.00130	0.999 (0.004)	0.149	0.960 (0.100)	3.960	0.998 (0.004)	0.157	0.943 (0.130)	5.689
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	15.59	0.00390	0.995 (0.004)	0.461	0.889 (0.092)	11.101	0.995 (0.004)	0.459	0.848 (0.120)	15.195
Applicant (50%, 1%)	Citation	Annual total	All Projects	6.30	0.00157	0.998 (0.004)	0.190	0.951 (0.097)	4.880	0.998 (0.004)	0.195	0.932 (0.130)	6.825
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	12.27	0.00307	0.996 (0.004)	0.362	0.910 (0.093)	8.997	0.996 (0.004)	0.368	0.877 (0.120)	12.306
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	27.38	0.00684	0.992 (0.004)	0.814	0.808 (0.086)	19.205	0.992 (0.004)	0.822	0.743 (0.110)	25.715
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	1.96	0.00049	0.999 (0.004)	0.061	0.984 (0.099)	1.553	0.999 (0.003)	0.061	0.980 (0.129)	2.024

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	7.07	0.00177	0.998 (0.004)	0.221	0.943 (0.096)	5.661	0.998 (0.004)	0.215	0.925 (0.126)	7.540
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	11.78	0.00295	0.996 (0.004)	0.354	0.912 (0.095)	8.756	0.996 (0.004)	0.354	0.879 (0.119)	12.134
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	3.85	0.00096	0.999 (0.004)	0.111	0.973 (0.099)	2.738	0.999 (0.003)	0.115	0.959 (0.128)	4.147
Guidance (60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	4.62	0.00116	0.999 (0.004)	0.137	0.965 (0.097)	3.481	0.999 (0.003)	0.141	0.951 (0.127)	4.904
Guidance (60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	13.87	0.00347	0.996 (0.004)	0.414	0.898	10.201	0.996 (0.004)	0.416	0.860 (0.118)	14.000
Applicant (50%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	5.82	0.00145	0.998 (0.004)	0.177	0.954	4.628	0.998 (0.004)	0.182	0.937 (0.127)	6.347
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	11.69	0.00292	0.996 (0.004)	0.352	0.912	8.812	0.996 (0.004)	0.355	0.879 (0.118)	12.130
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	25.66	0.00641	0.992 (0.004)	0.772	0.817	18.310	0.992 (0.004)	0.764	0.758 (0.106)	24.219
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	1.86	0.00047	0.999 (0.004)	0.058	0.986 (0.100)	1.445	0.060 (0.004)	0.060	0.980 (0.130)	2.046

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	6.71	0.00168	0.998 (0.004)	0.201	0.948 (0.098)	5.233	0.210 (0.004)	0.210	0.928 (0.130)	7.231
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	11.19	0.00280	0.997 (0.004)	0.331	0.915 (0.094)	8.467	0.332 (0.004)	0.332	0.885 (0.120)	11.520
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.78	0.00069	0.999 (0.004)	0.077	0.979 (0.099)	2.129	0.083 (0.004)	0.083	0.969 (0.130)	3.078
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	3.33	0.00083	0.999 (0.004)	0.106	0.974 (0.098)	2.624	0.102 (0.004)	0.102	0.964 (0.130)	3.570
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	9.99	0.00250	0.997 (0.004)	0.302	0.925 (0.097)	7.464	0.298 (0.004)	0.298	0.898 (0.120)	10.184
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	4.64	0.00116	0.999 (0.004)	0.136	0.962 (0.098)	3.829	0.138 (0.004)	0.138	0.950 (0.130)	4.967
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	10.04	0.00251	0.997 (0.004)	0.293	0.925 (0.094)	7.463	0.301 (0.004)	0.301	0.897 (0.120)	10.250
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	21.18	0.00529	0.994 (0.004)	0.632	0.847 (0.088)	15.344	0.639 (0.004)	0.639	0.794 (0.110)	20.619

3.5.3 Puffin

Table 3-23: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects	18.17	0.00603	0.993 (0.003)	0.708	0.832 (0.068)	16.836	0.993 (0.003)	0.714	0.772 (0.078)	22.756
Guidance (60%,3%)	SMP	Breeding	All Projects	65.40	0.02172	0.974 (0.003)	2.564	0.509 (0.046)	49.094	0.974 (0.003)	2.562	0.392 (0.046)	60.781
Guidance (60%,5%)	SMP	Breeding	All Projects	109.00	0.03620	0.957 (0.004)	4.269	0.321 (0.034)	67.869	0.957 (0.004)	4.278	0.207 (0.030)	79.274
Guidance (60%,3%)	SMP	Non-breeding	All Projects	0.85	0.00028	1.000 (0.003)	0.028	0.994 (0.079)	0.564	1.000 (0.003)	0.029	0.990 (0.096)	0.962
Applicant (50%,1%)	SMP	Annual Total	All Projects	18.40	0.00611	0.993 (0.003)	0.716	0.829 (0.068)	17.075	0.993 (0.003)	0.720	0.771 (0.078)	22.912
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	65.68	0.02181	0.974 (0.003)	2.572	0.508 (0.046)	49.246	0.974 (0.003)	2.574	0.391 (0.047)	60.907
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	109.85	0.03648	0.957 (0.004)	4.314	0.317 (0.033)	68.257	0.957 (0.004)	4.306	0.205 (0.030)	79.524

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects excluding Berwick Bank	18.13	0.00602	0.993 (0.003)	0.707	0.831 (0.067)	16.876	0.993 (0.003)	0.708	0.774 (0.078)	22.607
Guidance (60%,3%)	SMP	Breeding	All Projects excluding Berwick Bank	108.80	0.02168	0.974 (0.003)	2.558	0.511 (0.046)	48.920	0.974 (0.003)	2.557	0.393 (0.047)	60.692
Guidance (60%,5%)	SMP	Breeding	All Projects excluding Berwick Bank	109.00	0.03613	0.957 (0.004)	4.266	0.322 (0.033)	67.824	0.957 (0.004)	4.264	0.209 (0.029)	79.138
Guidance (60%,3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	0.65	0.00022	1.000 (0.003)	0.026	0.994 (0.078)	0.621	1.000 (0.003)	0.020	0.992 (0.097)	0.761
Applicant (50%,1%)	SMP	Annual Total	All Projects excluding Berwick Bank	18.31	0.00608	0.993 (0.003)	0.722	0.829 (0.068)	17.052	0.993 (0.003)	0.716	0.773 (0.079)	22.664
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	108.80	0.02175	0.974 (0.003)	2.565	0.509 (0.045)	49.114	0.974 (0.003)	2.569	0.393 (0.046)	60.748
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	109.45	0.03635	0.957 (0.004)	4.291	0.320 (0.032)	67.972	0.957 (0.004)	4.289	0.206 (0.029)	79.395
Applicant (50%,1%)	SMP	Breeding	All consented Projects plus Caledonia	18.10	0.00601	0.993 (0.003)	0.704	0.833 (0.067)	16.684	0.993 (0.003)	0.707	0.775 (0.079)	22.498

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Breeding	All consented Projects plus Caledonia	65.16	0.02164	0.974 (0.003)	2.552	0.511 (0.046)	48.939	0.974 (0.003)	2.553	0.393 (0.047)	60.665
Guidance (60%,5%)	SMP	Breeding	All consented Projects plus Caledonia	108.60	0.03607	0.957 (0.004)	4.267	0.322 (0.034)	67.817	0.957 (0.004)	4.272	0.207 (0.030)	79.256
Applicant (50%,1%)	SMP	Annual Total	All consented Projects plus Caledonia	18.10	0.00606	0.993 (0.003)	0.712	0.830 (0.065)	16.980	0.993 (0.003)	0.717	0.772 (0.077)	22.790
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	65.35	0.02170	0.974 (0.003)	2.559	0.510 (0.046)	49.039	0.974 (0.003)	2.560	0.393 (0.046)	60.710
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	109.17	0.03626	0.957 (0.004)	4.284	0.320 (0.034)	67.953	0.957 (0.004)	4.294	0.206 (0.030)	79.402
Applicant (50%,1%)	Citation	Breeding	All Projects	18.17	0.00437	0.995 (0.003)	0.512	0.874 (0.072)	12.576	0.995 (0.003)	0.514	0.829 (0.084)	17.063
Guidance (60%,3%)	Citation	Breeding	All Projects	65.40	0.01572	0.981 (0.003)	1.851	0.614 (0.054)	38.649	0.982 (0.003)	1.850	0.511 (0.056)	48.916
Guidance (60%,5%)	Citation	Breeding	All Projects	109.00	0.02620	0.969 (0.003)	3.089	0.442 (0.042)	55.805	0.969 (0.003)	3.092	0.322 (0.039)	67.808
Guidance (60%,3%)	Citation	Non-breeding	All Projects	0.85	0.00021	1.000 (0.003)	0.022	0.994 (0.081)	0.590	1.000 (0.003)	0.017	0.992 (0.098)	0.820

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	Citation	Annual Total	All Projects	18.40	0.00442	0.995 (0.003)	0.516	0.874 (0.072)	12.557	0.995 (0.003)	0.516	0.828 (0.085)	17.197
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects	65.68	0.01579	0.981 (0.003)	1.863	0.614 (0.053)	38.611	0.981 (0.003)	1.863	0.508 (0.056)	49.250
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	109.85	0.02641	0.969 (0.003)	3.119	0.439 (0.042)	56.110	0.969 (0.003)	3.118	0.319 (0.040)	68.054
Applicant (50%,1%)	Citation	Breeding	All Projects excluding Berwick Bank	18.13	0.00436	0.995 (0.003)	0.511	0.875 (0.071)	12.492	0.995 (0.003)	0.513	0.831 (0.084)	16.872
Guidance (60%,3%)	Citation	Breeding	All Projects excluding Berwick Bank	108.80	0.01569	0.981 (0.003)	1.852	0.615 (0.053)	38.536	0.981 (0.003)	1.853	0.509 (0.056)	49.080
Guidance (60%,5%)	Citation	Breeding	All Projects excluding Berwick Bank	109.00	0.02615	0.969 (0.003)	3.086	0.442 (0.042)	55.783	0.969 (0.003)	3.086	0.322 (0.040)	67.755
Applicant (50%,1%)	Citation	Annual Total	All Projects excluding Berwick Bank	0.65	0.00440	0.995 (0.003)	0.519	0.873 (0.071)	12.703	0.995 (0.003)	0.513	0.830 (0.082)	16.952
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	18.31	0.01574	0.981 (0.003)	1.858	0.613 (0.054)	38.654	0.981 (0.003)	1.858	0.509 (0.056)	49.145

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	108.80	0.02631	0.969 (0.003)	3.116	0.438 (0.042)	56.154	0.969 (0.003)	3.113	0.320 (0.040)	68.032
Applicant (50%,1%)	Citation	Breeding	All consented Projects plus Caledonia	109.45	0.00435	0.995 (0.003)	0.513	0.875 (0.072)	12.510	0.995 (0.003)	0.510	0.833 (0.083)	16.730
Guidance (60%,3%)	Citation	Breeding	All consented Projects plus Caledonia	18.10	0.01566	0.982 (0.003)	1.849	0.616 (0.054)	38.437	0.982 (0.003)	1.845	0.511 (0.056)	48.931
Guidance (60%,5%)	Citation	Breeding	All consented Projects plus Caledonia	65.16	0.02611	0.969 (0.003)	3.078	0.443 (0.042)	55.703	0.969 (0.003)	3.084	0.324 (0.040)	67.642
Applicant (50%,1%)	Citation	Annual Total	All consented Projects plus Caledonia	108.60	0.00439	0.995 (0.003)	0.512	0.874 (0.073)	12.604	0.995 (0.003)	0.516	0.829 (0.084)	17.113
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	18.10	0.01571	0.982 (0.003)	1.846	0.616 (0.054)	38.446	0.981 (0.003)	1.851	0.510 (0.057)	48.983
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	65.35	0.02624	0.969 (0.003)	3.093	0.441 (0.042)	55.855	0.969 (0.003)	3.102	0.322 (0.040)	67.839

Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

Table 3-24: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects	17.99	0.00597	0.993 (0.003)	0.704	0.831 (0.068)	16.853	0.993 (0.003)	0.706	0.774 (0.079)	22.581
Guidance (60%,3%)	SMP	Breeding	All Projects	64.75	0.02151	0.975 (0.003)	2.535	0.513 (0.046)	48.664	0.975 (0.003)	2.538	0.397 (0.047)	60.323
Guidance (60%,5%)	SMP	Breeding	All Projects	107.92	0.03584	0.958 (0.004)	4.232	0.325 (0.034)	67.491	0.958 (0.004)	4.236	0.210 (0.031)	78.953
Guidance (60%,3%)	SMP	Non-breeding	All Projects	0.89	0.00030	1.000 (0.003)	0.032	0.993 (0.079)	0.746	1.000 (0.003)	0.034	0.989 (0.097)	1.083
Applicant (50%,1%)	SMP	Annual Total	All Projects	18.23	0.00606	0.993 (0.003)	0.709	0.831 (0.067)	16.931	0.993 (0.003)	0.714	0.773 (0.078)	22.734
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	65.05	0.02160	0.969 (0.003)	3.071	0.444 (0.042)	55.623	0.969 (0.003)	3.079	0.325 (0.041)	67.534
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	108.82	0.03614	0.957 (0.004	4.267	0.322 (0.034)	67.788	0.957 (0.004)	4.268	0.208 (0.030)	79.185
Applicant (50%,1%)	SMP	Breeding	All Projects excluding Berwick Bank	17.95	0.00596	0.993 (0.003)	0.704	0.833 (0.067)	16.740	0.993 (0.003)	0.702	0.778 (0.078)	22.222

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Breeding	All Projects excluding Berwick Bank	64.63	0.02147	0.975 (0.003)	2.534	0.513 (0.046)	48.690	0.975 (0.003)	2.531	0.397 (0.047)	60.288
Guidance (60%,5%)	SMP	Breeding	All Projects excluding Berwick Bank	107.72	0.03578	0.958 (0.004)	4.216	0.326 (0.034)	67.412	0.958 (0.004)	4.226	0.211 (0.030)	78.892
Guidance (60%,3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	0.69	0.00023	1.000 (0.003)	0.022	0.993 (0.078)	0.654	1.000 (0.003)	0.021	0.991 (0.096)	0.942
Applicant (50%,1%)	SMP	Annual Total	All Projects excluding Berwick Bank	18.15	0.00603	0.993 (0.003)	0.712	0.831 (0.068)	16.858	0.993 (0.003)	0.708	0.775 (0.079)	22.521
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	64.86	0.02154	0.975 (0.003)	2.541	0.512 (0.046)	48.832	0.975 (0.003)	2.538	0.396 (0.047)	60.377
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	108.41	0.03601	0.958 (0.004)	4.247	0.324 (0.033)	67.634	0.958 (0.004)	4.247	0.210 (0.029)	79.040
Applicant (50%,1%)	SMP	Breeding	All consented Projects plus Caledonia	17.92	0.00595	0.993 (0.003)	0.700	0.833 (0.068)	16.732	0.993 (0.003)	0.693	0.777 (0.080)	22.267
Guidance (60%,3%)	SMP	Breeding	All consented Projects plus Caledonia	64.51	0.02143	0.975 (0.003)	2.522	0.514 (0.047)	48.568	0.975 (0.003)	2.532	0.397 (0.048)	60.295

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%)	SMP	Breeding	All consented Projects plus Caledonia	10.52	0.03571	0.958 (0.004)	4.218	0.325 (0.034)	67.459	0.958 (0.004)	4.225	0.211 (0.030)	78.859
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	0.61	0.00020	1.000 (0.003)	0.023	0.995 (0.080)	0.471	1.000 (0.003)	0.020	0.993 (0.097)	0.672
Applicant (50%,1%)	SMP	Annual Total	All consented Projects plus Caledonia	18.09	0.00601	0.993 (0.003)	0.707	0.831 (0.067)	16.913	0.993 (0.003)	0.706	0.774 (0.077)	22.591
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	64.72	0.02149	0.975 (0.003)	2.535	0.513 (0.046)	48.701	0.975 (0.003)	2.525	0.398 (0.047)	60.231
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	108.13	0.03591	0.958 (0.004)	4.234	0.325 (0.034)	67.540	0.958 (0.004)	4.233	0.210 (0.030)	78.966
Applicant (50%,1%)	Citation	Breeding	All Projects	17.99	0.00432	0.995 (0.003)	0.515	0.874 (0.072)	12.648	0.995 (0.003)	0.510	0.831 (0.083)	16.876
Guidance (60%,3%)	Citation	Breeding	All Projects	64.75	0.01557	0.982 (0.003)	1.836	0.617 (0.054)	38.291	0.982 (0.003)	1.839	0.513 (0.057)	48.683
Guidance (60%,5%)	Citation	Breeding	All Projects	107.92	0.02594	0.969 (0.003)	3.060	0.445 (0.042)	55.548	0.969 (0.003)	3.071	0.325 (0.041)	67.483
Guidance (60%,3%)	Citation	Non-breeding	All Projects	0.89	0.00021	1.000 (0.003)	0.021	0.995 (0.081)	0.533	1.000 (0.002)	0.018	0.993 (0.097)	0.741

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	Citation	Annual Total	All Projects	18.23	0.00438	0.995 (0.003)	0.520	0.873 (0.071)	12.747	0.995 (0.003)	0.520	0.828 (0.083)	17.246
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects	65.05	0.01564	0.982 (0.003)	1.844	0.615 (0.054)	38.450	0.982 (0.003)	1.849	0.511 (0.058)	48.909
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	108.82	0.02616	0.969 (0.003)	3.086	0.443 (0.042)	55.737	0.969 (0.003)	3.098	0.323 (0.040)	67.743
Applicant (50%,1%)	Citation	Breeding	All Projects excluding Berwick Bank	17.95	0.00432	0.995 (0.003)	0.508	0.875 (0.071)	12.491	0.995 (0.003)	0.503	0.833 (0.082)	16.665
Guidance (60%,3%)	Citation	Breeding	All Projects excluding Berwick Bank	64.63	0.01554	0.982 (0.003)	1.834	0.617 (0.053)	38.321	0.982 (0.003)	1.838	0.513 (0.055)	48.726
Guidance (60%, %)	Citation	Breeding	All Projects excluding Berwick Bank	107.72	0.02590	0.969 (0.003)	3.058	0.447 (0.042)	55.308	0.969 (0.003)	3.066	0.326 (0.040)	67.375
Applicant (50%,1%)	Citation	Annual Total	All Projects excluding Berwick Bank	18.15	0.00436	0.995 (0.003)	0.517	0.873 (0.071)	12.693	0.995 (0.003)	0.519	0.831 (0.083)	16.928
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	64.86	0.01559	0.982 (0.003)	1.838	0.618 (0.053)	38.248	0.982 (0.003)	1.837	0.513 (0.055)	48.743

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	108.41	0.02606	0.969 (0.003)	3.064	0.445 (0.041)	55.463	0.969 (0.003)	3.074	0.324 (0.039)	67.558
Applicant (50%,1%)	Citation	Breeding	All consented Projects plus Caledonia	17.92	0.00431	0.995 (0.003)	0.505	0.876 (0.071)	12.435	0.995 (0.003)	0.509	0.832 (0.084)	16.805
Guidance (60%,3%)	Citation	Breeding	All consented Projects plus Caledonia	64.51	0.01551	0.982 (0.003)	1.837	0.617 (0.055)	38.260	0.982 (0.003)	1.833	0.513 (0.058)	48.674
Guidance (60%,5%)	Citation	Breeding	All consented Projects plus Caledonia	107.52	0.02585	0.970 (0.003)	3.047	0.447 (0.042)	55.329	0.969 (0.003)	3.058	0.327 (0.040)	67.323
Applicant (50%,1%)	Citation	Annual Total	All consented Projects plus Caledonia	18.09	0.00435	0.995 (0.003)	0.512	0.874 (0.072)	12.577	0.995 (0.003)	0.514	0.831 (0.084)	16.933
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	64.72	0.01556	0.982 (0.003)	1.844	0.616 (0.054)	38.385	0.982 (0.003)	1.839	0.513 (0.057)	48.729
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	108.13	0.02599	0.969 (0.003)	3.072	0.444 (0.042)	55.601	0.969 (0.003)	3.071	0.325 (0.040)	67.501

Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

3.6 Troup, Pennan and Lion's Heads SPA: Project Alone

3.6.1 Guillemot: Caledonia North

Table 3-25: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	11.76	0.00025	1.000 (<0.001)	0.028	0.993 (0.010)	0.726	1.000 (<0.001)	0.028	0.990 (0.011)	1.020
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	13.50	0.00028	1.000 (<0.001)	0.032	0.992 (0.010)	0.855	1.000 (<0.001)	0.032	0.988 (0.011)	1.166
Guidance (60%, 5%)	Citation	Breeding	11.76	0.00026	1.000 (<0.001)	0.030	0.992 (0.011)	0.780	1.000 (<0.001)	0.030	0.989 (0.012)	1.111
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	13.50	0.00030	1.000 (<0.001)	0.035	0.991 (0.011)	0.880	1.000 (<0.001)	0.035	0.988 (0.011)	1.228

3.6.2 Guillemot: Caledonia South

Table 3-26: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.07	0.00023	1.000 (<0.001)	0.026	0.993 (0.010)	0.675	1.000 (<0.001)	0.026	0.991 (0.011)	0.927
Guidance (60%, 5%)	SMP	Breeding	18.45	0.00039	1.000 (<0.001)	0.043	0.988 (0.010)	1.157	1.000 (<0.001)	0.043	0.984 (0.011)	1.586
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	13.41	0.00028	1.000 (<0.001)	0.031	0.992 (0.010)	0.813	1.000 (<0.001)	0.031	0.999 (0.011)	1.122
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	25.48	0.00053	0.999 (<0.001)	0.059	0.985 (0.010)	1.532	0.999 (<0.001)	0.059	0.978 (0.011)	2.118
Guidance (60%, 3%)	Citation	Breeding	11.07	0.00025	1.000 (<0.001)	0.028	0.993 (0.011)	0.731	1.000 (<0.001)	0.028	0.990 (0.011)	1.011
Guidance (60%, 5%)	Citation	Breeding	18.45	0.00041	1.000 (<0.001)	0.047	0.988 (0.011)	1.209	1.000 (<0.001)	0.047	0.983 (0.011)	1.661
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	13.41	0.00030	1.000 (<0.001)	0.033	0.991 (0.011)	0.861	1.000 (<0.001)	0.033	0.988 (0.011)	1.189
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	25.48	0.00057	0.999 (<0.001)	0.064	0.983 (0.010)	1.691	0.999 (<0.001)	0.064	0.977 (0.011)	2.284

3.6.3 Guillemot: Proposed Development (Offshore)

Table 3-27: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	15.73	0.00033	1.000 (<0.001)	0.038	0.990 (0.010)	0.974	1.000 (<0.001)	0.037	0.987 (0.011)	1.334
Guidance (60%, 5%)	SMP	Breeding	26.22	0.00054	0.999 (<0.001)	0.061	0.983 (0.010)	1.574	0.999 (<0.001)	0.062	0.978 (0.011)	2.193
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	18.45	0.00039	1.000 (<0.001)	0.043	0.989 (0.010)	1.131	1.000 (<0.001)	0.043	0.984 (0.011)	1.569
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	34.37	0.00072	0.999 (<0.001)	0.080	0.979 (0.010)	2.099	0.999 (<0.001)	0.081	0.971 (0.011)	2.868
Guidance (60%, 3%	Citation	Breeding	15.73	0.00035	1.000 (<0.001)	0.040	0.990 (0.011)	1.029	1.000 (<0.001)	0.040	0.955 (0.011)	1.447
Guidance (60%, 5%)	Citation	Breeding	26.22	0.00059	0.999 (<0.001)	0.066	0.945 (0.011)	1.708	0.999 (<0.001)	0.066	0.925 (0.011)	2.351
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	18.45	0.00041	1.000 (<0.001)	0.047	0.988 (0.011)	1.215	1.000 (<0.001)	0.047	0.930 (0.011)	1.665
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	34.37	0.00077	0.999 (<0.001)	0.088	0.977 (0.011)	2.260	0.999 (<0.001)	0.087	0.854 (0.010)	3.098

3.6.4 Razorbill: Caledonia North

Table 3-28: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	1.56	0.00033	1.000 (0.003)	1.124	0.989 (0.093)	0.049	1.000 (0.003)	0.041	0.981 (0.120)	1.561
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	0.99	0.00033	1.000 (0.003)	0.737	0.993 (0.093)	0.028	1.000 (0.003)	0.027	0.984 (0.120)	1.017
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.72	0.00033	1.000 (0.003)	1.229	0.988 (0.093)	0.049	1.000 (0.003)	0.046	0.990 (0.119)	1.883

3.6.5 Razorbill: Caledonia South

Table 3-29: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	1.94	0.00022	1.000 (0.002)	0.025	0.993 (0.062)	0.734	1.000 (0.002)	0.028	0.991 (0.082)	0.898
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	2.02	0.00022	1.000 (0.002)	0.032	0.993 (0.062)	0.728	1.000 (0.002)	0.029	0.990 (0.082)	0.996
Guidance (60%, 3%)	Citation	Breeding	1.16	0.00024	1.000 (0.003)	0.028	0.991 (0.095)	0.881	1.000 (0.003)	0.027	0.989 (0.120)	1.066
Guidance (60%, 5%)	Citation	Breeding	1.94	0.00024	1.000 (0.003)	0.041	0.986 (0.093)	1.353	1.000 (0.003)	0.045	0.984 (0.120)	1.647
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	1.19	0.00024	1.000 (0.003)	0.038	0.990 (0.091)	0.950	1.000 (0.003)	0.026	0.989 (0.120)	1.076
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	2.02	0.00024	1.000 (0.003)	0.042	0.988 (0.092)	1.225	1.000 (0.003)	0.031	0.986 (0.120)	1.386

3.6.6 Razorbill: Proposed Development (Offshore)

Table 3-30: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	3.59	0.00021	1.000 (0.002)	0.033	0.992 (0.053)	0.792	1.000 (0.002)	0.034	0.989 (0.070)	1.146
Guidance (60%, 5%)	SMP	Breeding	5.98	0.00021	1.000 (0.002)	0.045	0.988 (0.054)	1.169	1.000 (0.002)	0.049	0.984 (0.070)	1.608
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	6.92	0.00021	1.000 (0.002)	0.031	0.993 (0.054)	0.729	1.000 (0.002)	0.032	0.989 (0.071)	1.117
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	15.99	0.00021	1.000 (0.002)	0.050	0.988 (0.055)	1.241	1.000 (0.002)	0.054	0.982 (0.072)	1.772
Guidance (60%, 3%)	Citation	Breeding	3.59	0.00039	0.999 (0.002)	0.050	0.986 (0.067)	1.446	0.999 (0.002)	0.054	0.981 (0.080)	1.919
Guidance (60%, 5%)	Citation	Breeding	5.98	0.00039	0.999 (0.002)	0.089	0.977 (0.067)	2.262	0.999 (0.002)	0.085	0.969 (0.080)	3.073
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.92	0.00039	0.999 (0.002)	0.051	0.987 (0.066)	1.324	0.999 (0.002)	0.050	0.982 (0.081)	1.844
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	15.99	0.00039	0.999 (0.002)	0.086	0.978 (0.068)	2.198	0.999 (0.002)	0.081	0.971 (0.081)	2.888

3.6.7 Kittiwake: Caledonia South

Table 3-31: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the Troup, Pennan and Lion's Heads SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Annual Total	6.02	0.00022	1.000 (0.001)	0.024	0.994 (0.022)	0.622	1.000 (0.001)	0.025	0.991 (0.025)	0.900

3.6.8 Kittiwake: Proposed Development (Offshore)

Table 3-32: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) alone.

Approach	Data Source	Season	Predicted Mortality	Impact	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	5.55	Collision	0.00020	1.000 (0.001)	0.025	0.994 (0.021)	0.622	1.000 (0.001)	0.023	0.991 (0.023)	0.891
Guidance	SMP	Annual Total	5.83	Collision	0.00021	1.000 (0.001)	0.025	0.994 (0.021)	0.634	1.000 (0.001)	0.023	0.992 (0.023)	0.835
Guidance (30%, 1%)	SMP	Annual Total	6.56	Dist. and collision	0.00024	1.000 (0.001)	0.028	0.993 (0.021)	0.728	1.000 (0.001)	0.027	0.990 (0.023)	0.969
Guidance (30%, 3%)	SMP	Annual Total	7.66	Dist. and collision	0.00028	1.000 (0.001)	0.033	0.991 (0.021)	0.890	1.000 (0.001)	0.035	0.988 (0.023)	1.212

For formatting purposes distributional responses are shortened to Dist

3.7 Troup, Pennan and Lion's Heads SPA: In-combination

3.7.1 Guillemot

Table 3-33: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	14.21	0.00030	1.000 (<0.001)	0.033	0.991 (0.010)	0.862	1.000 (<0.001)	0.034	0.988 (0.010)	1.203
Guidance (60%, 3%)	SMP	Breeding	All Projects	51.17	0.00107	0.999 (<0.001)	0.122	0.969 (0.009)	3.079	0.999 (<0.001)	0.121	0.958 (0.010)	4.235
Guidance (60%, 5%)	SMP	Breeding	All Projects	85.29	0.00179	0.998 (<0.001)	0.201	0.949 (0.009)	5.111	0.998 (<0.001)	0.202	0.930 (0.010)	6.997
Applicant (50%, 1%)	SMP	Non-Breeding	All Projects	24.45	0.00051	0.999 (<0.001)	0.057	0.985 (0.010)	1.467	0.999 (<0.001)	0.057	0.980 (0.010)	2.017
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects	29.33	0.00061	0.999 (<0.001)	0.070	0.982 (0.010)	1.796	0.999 (<0.001)	0.070	0.975 (0.010)	2.472
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects	88.00	0.00184	0.998 (<0.001)	0.208	0.948 (0.009)	5.248	0.998 (<0.001)	0.208	0.928 (0.010)	7.195

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual Total	All Projects	38.66	0.00081	0.999 (<0.001)	0.092	0.977 (0.010)	2.341	0.999 (<0.001)	0.091	0.968 (0.010)	3.229
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	80.51	0.00169	0.998 (<0.001)	0.190	0.952 (0.010)	4.807	0.998 (<0.001)	0.189	0.934 (0.010)	6.601
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	173.29	0.00363	0.996(<0.001)	0.408	0.899 (0.009)	10.091	0.996 (<0.001)	0.409	0.863 (0.009)	13.696
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	9.18	0.00020	1.000 (<0.001)	0.023	0.994 (0.010)	0.583	1.000 (<0.001)	0.022	0.992 (0.010)	0.801
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	33.05	0.00069	0.999 (<0.001)	0.078	0.980 (0.010)	2.026	0.999 (<0.001)	0.078	0.972 (0.010)	2.783
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	55.09	0.00115	0.999 (<0.001)	0.130	0.967 (0.009)	3.320	0.999 (<0.001)	0.130	0.954 (0.010)	4.572
Applicant (50%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	12.40	0.00026	1.000 (<0.001)	0.029	0.992 (0.010)	0.756	1.000 (<0.001)	0.029	0.990 (0.010)	1.018

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	14.88	0.00031	1.000 (<0.001)	0.035	0.991 (0.010)	0.896	1.000 (<0.001)	0.035	0.988 (0.010)	1.246
Guidance (60%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	44.65	0.00094	0.999 (<0.001)	0.105	0.973 (0.010)	2.700	0.999 (<0.001)	0.106	0.963 (0.010)	3.720
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	21.58	0.00045	0.999 (<0.001)	0.051	0.987 (0.010)	1.314	0.999 (<0.001)	0.051	0.982 (0.010)	1.818
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	47.94	0.00100	0.999 (<0.001)	0.114	0.971 (0.009)	2.911	0.999 (<0.001)	0.114	0.960 (0.010)	3.999
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	99.74	0.00209	0.998 (<0.001)	0.235	0.941 (0.009)	5.926	0.998 (<0.001)	0.235	0.919 (0.010)	8.114
Applicant (50%, 1%)	Citation	Breeding	All Projects	14.21	0.00032	1.000 (<0.001)	0.036	0.991 (0.011)	0.926	1.000 (<0.001)	0.035	0.987 (0.011)	1.264
Guidance (60%, 3%)	Citation	Breeding	All Projects	51.17	0.00115	0.999 (<0.001)	0.129	0.967 (0.010)	3.306	0.999 (<0.001)	0.128	0.955 (0.011)	4.530

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	All Projects	85.29	0.00191	0.998 (<0.001)	0.215	0.945 (0.010)	5.458	0.998 (<0.001)	0.215	0.925 (0.011)	7.453
Applicant (50%, 1%)	Citation	Non-Breeding	All Projects	24.45	0.00055	0.999 (<0.001)	0.061	0.984 (0.011)	1.594	0.999 (<0.001)	0.062	0.978 (0.011)	2.207
Guidance (60%, 1%)	Citation	Non-Breeding	All Projects	29.33	0.00065	0.999 (<0.001)	0.074	0.981 (0.011)	1.914	0.999 (<0.001)	0.074	0.974 (0.011)	2.636
Guidance (60%, 3%)	Citation	Non-Breeding	All Projects	88.00	0.00197	0.998 (<0.001)	0.223	0.944 (0.010)	5.639	0.998 (<0.001)	0.222	0.923 (0.011)	7.705
Applicant (50%, 1%)	Citation	Annual Total	All Projects	38.66	0.00087	0.999 (<0.001)	0.098	0.975 (0.011)	2.536	0.999 (<0.001)	0.098	0.965 (0.011)	3.479
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	80.51	0.00181	0.998 (<0.001)	0.202	0.949 (0.010)	5.138	0.998 (<0.001)	0.203	0.930 (0.011)	7.040
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	173.29	0.00389	0.996 (<0.001)	0.437	0.892 (0.010)	10.755	0.996 (<0.001)	0.437	0.854 (0.010)	14.583
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	9.18	0.00019	1.000 (<0.001)	0.023	0.994 (0.011)	0.583	1.000 (<0.001)	0.023	0.9292 (0.011)	0.803

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	33.05	0.00069	0.999 (<0.001)	0.084	0.978 (0.011)	2.155	0.999 (<0.001)	0.084	0.970 (0.011)	2.967
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	55.09	0.00115	0.999 (<0.001)	0.139	0.964 (0.010)	3.555	0.999 (<0.001)	0.139	0.951 (0.011)	4.884
Applicant (50%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	12.40	0.00026	1.000 (<0.001)	0.031	0.992 (0.011)	0.809	1.000 (<0.001)	0.032	0.989 (0.011)	1.115
Guidance (60%, 3%; 60%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	14.88	0.00031	1.000 (<0.001)	0.038	0.990 (0.011)	0.973	1.000 (<0.001)	0.038	0.986 (0.011)	1.362
Guidance (60%, 5%; 60%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	44.65	0.00094	0.999 (<0.001)	0.113	0.971 (0.010)	2.893	0.999 (<0.001)	0.112	0.960 (0.011)	3.985
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	21.58	0.00045	0.999 (<0.001)	0.055	0.986 (0.011)	1.415	0.999 (<0.001)	0.055	0.980 (0.011)	1.952

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	47.94	0.00100	0.999 (<0.001)	0.121	0.969 (0.011)	3.112	0.999 (<0.001)	0.120	0.957 (0.011)	4.260
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	99.74	0.00209	0.997 (<0.001)	0.252	0.936 (0.010)	6.355	0.997 (<0.001)	0.252	0.913 (0.010)	8.685

3.7.2 Razorbill

Table 3-34: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	1.48	0.00017	1.000 (0.002)	0.021	0.994 (0.055)	0.567	1.000 (0.002)	0.026	0.991 (0.072)	0.928
Guidance (60%, 3%)	SMP	Breeding	All Projects	5.34	0.00061	0.999 (0.002)	0.075	0.980 (0.054)	1.964	0.999 (0.002)	0.073	0.974 (0.071)	2.632
Guidance (60%, 5%)	SMP	Breeding	All Projects	8.90	0.00101	0.999 (0.002)	0.123	0.968 (0.053)	3.246	0.999 (0.002)	0.127	0.956 (0.070)	4.441
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	4.33	0.00049	0.999 (0.002)	0.059	0.985 (0.054)	1.499	0.999 (0.002)	0.060	0.979 (0.072)	2.054
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	5.20	0.00059	0.999 (0.002)	0.098	0.975 (0.054)	2.520	0.999 (0.002)	0.098	0.965 (0.070)	3.474
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	15.60	0.00177	0.998 (0.002)	0.213	0.946 (0.053)	5.421	0.998 (0.002)	0.216	0.925 (0.067)	7.500
Applicant (50%, 1%)	SMP	Annual Total	All Projects	5.82	0.00066	0.999 (0.002)	0.083	0.978 (0.054)	2.179	0.999 (0.002)	0.083	0.970 (0.071)	3.000
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	10.54	0.00120	0.999 (0.002)	0.146	0.964 (0.054)	3.618	0.999 (0.002)	0.146	0.949 (0.070)	5.122

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	24.50	0.00278	0.997 (0.002)	0.337	0.915 (0.05)	8.506	0.997 (0.002)	0.340	0.885 (0.064)	11.511
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	1.26	0.00014	1.000 (0.002)	0.017	0.995 (0.054)	0.467	1.000 (0.002)	0.023	0.992 (0.071)	0.785
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	4.54	0.00052	0.999 (0.002)	0.059	0.984 (0.053)	1.574	0.999 (0.002)	0.060	0.979 (0.071)	2.092
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	7.57	0.00086	0.999 (0.002)	0.109	0.972 (0.054)	2.849	0.999 (0.002)	0.109	0.961 (0.070)	3.894
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.86	0.00044	0.999 (0.002)	0.058	0.986 (0.054)	1.358	0.999 (0.002)	0.062	0.978 (0.071)	2.245
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.63	0.00053	0.999 (0.002)	0.064	0.984 (0.054)	1.640	0.999 (0.002)	0.066	0.977 (0.071)	2.289
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.88	0.00158	0.998 (0.002)	0.195	0.951 (0.053)	4.945	0.998 (0.002)	0.195	0.931 (0.068)	6.851
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	5.12	0.00058	0.999 (0.002)	0.075	0.981 (0.053)	1.889	0.999 (0.002)	0.073	0.975 (0.070)	2.543

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	9.17	0.00104	0.999 (0.002)	0.126	0.967 (0.053)	3.346	0.999 (0.002)	0.133	0.954 (0.070)	4.592
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	21.45	0.00244	0.997 (0.002)	0.291	0.927 (0.052)	7.297	0.997 (0.002)	0.295	0.899 (0.067)	10.077
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	1.00	0.00011	1.000 (0.002)	0.020	0.995 (0.054)	0.515	1.000 (0.002)	0.020	0.992 (0.072)	0.796
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	3.59	0.00041	1.000 (0.002)	0.049	0.988 (0.055)	1.243	0.999 (0.002)	0.054	0.981 (0.072)	1.856
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	5.98	0.00068	0.999 (0.002)	0.085	0.979 (0.054)	2.140	0.999 (0.002)	0.091	0.968 (0.070)	3.189
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.78	0.00032	1.000 (0.002)	0.037	0.990 (0.055)	1.023	1.000 (0.002)	0.036	0.987 (0.072)	1.334
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.34	0.00038	0.999 (0.002)	0.070	0.982 (0.053)	1.773	0.999 (0.002)	0.071	0.974 (0.070)	2.564
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	10.01	0.00114	0.999 (0.002)	0.132	0.966 (0.053)	3.396	0.999 (0.002)	0.135	0.953 (0.070)	4.680

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.78	0.00043	0.999 (0.002)	0.055	0.986 (0.053)	1.447	0.999 (0.002)	0.060	0.979 (0.071)	2.051
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	6.92	0.00079	0.999 (0.002)	0.096	0.974 (0.054)	2.552	0.999 (0.002)	0.094	0.966 (0.069)	3.362
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	15.99	0.00182	0.998 (0.002)	0.220	0.945 (0.053)	5.527	0.998 (0.002)	0.221	0.923 (0.068)	7.721
Applicant (50%, 1%)	Citation	Breeding	All Projects	1.48	0.00031	1.000 (0.003)	0.038	0.990 (0.092)	0.991	1.000 (0.003)	0.036	0.985 (0.120)	1.536
Guidance (60%, 3%)	Citation	Breeding	All Projects	5.34	0.00111	0.999 (0.003)	0.135	0.965 (0.091)	3.532	0.999 (0.003)	0.136	0.953 (0.120)	4.698
Guidance (60%, 5%)	Citation	Breeding	All Projects	8.90	0.00185	0.998 (0.003)	0.226	0.943 (0.090)	5.669	0.998 (0.003)	0.221	0.924 (0.110)	7.641
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	4.33	0.00090	0.999 (0.003)	0.112	0.971 (0.092)	2.866	0.999 (0.003)	0.111	0.959 (0.120)	4.106
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	5.20	0.00108	0.998 (0.003)	0.152	0.960 (0.092)	4.020	0.999 (0.003)	0.148	0.947 (0.120)	5.282
Guidance (60%, 5%)	Citation	Non-breeding	All Projects	15.60	0.00325	0.996 (0.003)	0.393	0.904 (0.085)	9.615	0.996 (0.003)	0.387	0.869 (0.110)	13.071

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Annual Total	All Projects	5.82	0.00121	0.998 (0.003)	0.155	0.960 (0.092)	4.040	0.998 (0.003)	0.151	0.946 (0.120)	5.434
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	10.54	0.00220	0.997 (0.003)	0.269	0.930 (0.090)	6.976	0.997 (0.003)	0.257	0.912 (0.110)	8.811
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	24.50	0.00510	0.994 (0.003)	0.612	0.853 (0.081)	14.738	0.994 (0.003)	0.616	0.800 (0.100)	20.000
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	1.26	0.00026	1.000 (0.003)	0.039	0.988 (0.092)	1.160	1.000 (0.003)	0.037	0.986 (0.120)	1.368
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	4.54	0.00095	0.999 (0.003)	0.123	0.969 (0.092)	3.052	0.999 (0.003)	0.115	0.958 (0.120)	4.167
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	7.57	0.00158	0.998 (0.003)	0.184	0.951 (0.090)	4.905	0.998 (0.003)	0.183	0.932 (0.120)	6.755
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	3.86	0.00080	0.999 (0.003)	0.103	0.973 (0.093)	2.666	0.999 (0.003)	0.107	0.962 (0.120)	3.790
Guidance (60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	4.63	0.00096	0.999 (0.003)	0.113	0.971 (0.091)	2.862	0.999 (0.003)	0.110	0.960 (0.120)	4.034

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	13.88	0.00289	0.996 (0.003)	0.352	0.912 (0.088)	8.844	0.997 (0.003)	0.349	0.882 (0.110)	11.818
Applicant (50%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	5.12	0.00107	0.999 (0.003)	0.128	0.966 (0.092)	3.365	0.999 (0.003)	0.126	0.955 (0.120)	4.547
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	9.17	0.00191	0.998 (0.003)	0.231	0.942 (0.089)	5.776	0.998 (0.003)	0.234	0.920 (0.110)	7.987
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	21.45	0.00447	0.995 (0.003)	0.537	0.869 (0.083)	13.053	0.995 (0.003)	0.537	0.823 (0.100)	17.667
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	1.00	0.00021	1.000 (0.003)	0.033	0.991 (0.094)	0.905	1.000 (0.003)	0.031	0.989 (0.120)	1.101
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	3.59	0.00075	0.999 (0.003)	0.095	0.976 (0.093)	2.437	0.999 (0.003)	0.096	0.965 (0.120)	3.457
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	5.98	0.00125	0.998 (0.003)	0.150	0.960 (0.092)	3.993	0.998 (0.003)	0.154	0.947 (0.120)	5.329
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.78	0.00058	0.999 (0.003)	0.072	0.982 (0.094)	1.832	0.999 (0.003)	0.069	0.976 (0.120)	2.368

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	3.34	0.00069	0.999 (0.003)	0.097	0.973 (0.092)	2.728	0.999 (0.003)	0.106	0.963 (0.120)	3.714
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	10.01	0.00208	0.997 (0.003)	0.255	0.938 (0.090)	6.250	0.997 (0.003)	0.258	0.912 (0.110)	8.833
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	3.78	0.00079	0.999 (0.003)	0.098	0.974 (0.091)	2.579	0.999 (0.003)	0.093	0.967 (0.120)	3.291
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	6.92	0.00144	0.998 (0.003)	0.174	0.956 (0.092)	4.370	0.998 (0.003)	0.169	0.942 (0.120)	5.820
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	15.99	0.00333	0.996 (0.003)	0.398	0.900 (0.085)	10.000	0.996 (0.003)	0.403	0.864 (0.110)	13.626

3.7.3 Kittiwake

Table 3-35: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	113.71	0.00085	0.999 (0.001)	0.098	0.975 (0.021)	2.514	0.999 (0.001)	0.098	0.965 (0.023)	3.464
Guidance (30%, 3%)	SMP	Breeding	All Projects	185.23	0.00131	0.996 (0.001)	0.449	0.890 (0.015)	11.023	0.996 (<0.001)	0.447	0.851 (0.016)	14.887
Guidance (30%, 1%)	SMP	Non-breeding	All Projects	140.87	0.00230	0.997 (0.001)	0.272	0.932 (0.020)	6.826	0.997 (0.001)	0.271	0.907 (0.022)	9.335
Guidance (30%, 3%)	SMP	Non-breeding	All Projects	157.08	0.00252	0.996 (0.001)	0.381	0.905 (0.015)	9.486	0.996 (<0.001)	0.380	0.872 (0.016)	12.840
Guidance (30%, 1%)	SMP	Annual Total	All Projects	254.58	0.00302	0.996 (0.001)	0.355	0.912 (0.020)	8.815	0.996 (0.001)	0.356	0.880 (0.021)	12.041
Guidance (30%, 3%)	SMP	Annual Total	All Projects	342.30	0.00370	0.992 (0.001)	0.828	0.805 (0.014)	19.455	0.992 (<0.001)	0.827	0.742 (0.014)	25.847
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	113.34	0.00078	0.999 (0.001)	0.088	0.977 (0.021)	2.338	0.999 (0.001)	0.090	0.968 (0.023)	3.164

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	184.75	0.00122	0.999 (0.001)	0.142	0.964 (0.021)	3.636	0.999 (0.001)	0.142	0.950 (0.023)	5.012
Guidance (30%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	119.58	0.00201	0.998 (0.001)	0.237	0.940 (0.020)	5.963	0.998 (0.001)	0.237	0.918 (0.022)	8.190
Guidance (30%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	125.49	0.00209	0.998 (0.001)	0.245	0.939 (0.020)	6.146	0.998 (0.001)	0.245	0.916 (0.022)	8.420
Guidance (30%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	232.92	0.00266	0.997 (0.001)	0.313	0.922 (0.020)	7.839	0.997 (0.001)	0.313	0.893 (0.022)	10.710
Guidance (30%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	310.24	0.00318	0.996 (0.001)	0.376	0.907 (0.020)	9.306	0.996 (0.001)	0.375	0.874 (0.021)	12.638
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	16.56	0.00061	0.999 (0.001)	0.051	0.987 (0.021)	1.319	0.999 (0.001)	0.052	0.981 (0.023)	1.865

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	23.30	0.00091	0.999 (0.001)	0.106	0.973 (0.020)	2.731	0.999 (0.001)	0.107	0.962 (0.022)	3.791
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.03	0.00132	0.999 (0.001)	0.149	0.961 (0.020)	3.858	0.998 (0.001)	0.151	0.947 (0.022)	5.325
Guidance (30%, 3%)	SMP	Non-breeding	Consented plus Caledonia	62.88	0.00138	0.998 (0.001)	0.163	0.958 (0.020)	4.160	0.998 (0.001)	0.163	0.943 (0.022)	5.701
Guidance (30%, 1%)	SMP	Annual Total	Consented plus Caledonia	48.98	0.00179	0.998 (0.001)	0.191	0.951 (0.020)	4.863	0.998 (0.001)	0.192	0.933 (0.022)	6.704
Guidance (30%, 3%)	SMP	Annual Total	Consented plus Caledonia	82.56	0.00216	0.997 (0.001)	0.255	0.936 (0.020)	6.445	0.997 (0.001)	0.256	0.912 (0.022)	8.797
Guidance (30%, 1%)	Citation	Breeding	All Projects	113.71	0.00037	1.000 (<0.001)	0.044	0.989 (0.015)	1.111	1.000 (<0.001)	0.044	0.984 (0.016)	1.551
Guidance (30%, 3%)	Citation	Breeding	All Projects	185.23	0.00057	0.999 (<0.001)	0.067	0.983 (0.015)	1.713	0.999 (<0.001)	0.067	0.976 (0.016)	2.403

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Non-breeding	All Projects	140.87	0.00099	0.999 (<0.001)	0.116	0.970 (0.015)	3.019	0.999 (<0.001)	0.118	0.958 (0.016)	4.165
Guidance (30%, 3%)	Citation	Non-breeding	All Projects	157.08	0.00109	0.999 (<0.001)	0.130	0.967 (0.015)	3.287	0.999 (<0.001)	0.130	0.954 (0.016)	4.561
Guidance (30%, 1%)	Citation	Annual Total	All Projects	254.58	0.00131	0.998 (<0.001)	0.155	0.961 (0.015)	3.928	0.998 (<0.001)	0.154	0.946 (0.016)	5.403
Guidance (30%, 3%)	Citation	Annual Total	All Projects	342.30	0.00160	0.998 (<0.001)	0.189	0.952 (0.015)	4.795	0.998 (<0.001)	0.190	0.934 (0.015)	6.579
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	113.34	0.00034	1.000 (<0.001)	0.039	0.990 (0.015)	1.037	1.000 (<0.001)	0.040	0.985 (0.017)	1.460
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	184.75	0.00053	0.999 (<0.001)	0.063	0.984 (0.015)	1.645	0.999 (<0.001)	0.063	0.977 (0.016)	2.255
Guidance (30%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	119.58	0.00087	0.999 (<0.001)	0.104	0.973 (0.015)	2.663	0.999 (<0.001)	0.104	0.963 (0.016)	3.665
Guidance (30%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	125.49	0.00090	0.999 (<0.001)	0.107	0.972 (0.015)	2.756	0.999 (<0.001)	0.107	0.962 (0.016)	3.786

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	232.92	0.00115	0.999 (<0.001)	0.136	0.965 (0.015)	3.489	0.999 (<0.001)	0.137	0.952 (0.016)	4.789
Guidance (30%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	310.24	0.00138	0.998 (<0.001)	0.163	0.958 (0.015)	4.157	0.998 (<0.001)	0.162	0.943 (0.016)	5.709
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	16.56	0.00026	1.000 (<0.001)	0.031	0.992 (0.015)	0.801	1.000 (<0.00)	0.031	0.988 (0.016)	1.151
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	23.30	0.00039	1.000 (<0.001)	0.046	0.988 (0.015)	1.197	1.000 (<0.001)	0.047	0.983 (0.017)	1.694
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.03	0.00057	0.999 (<0.001)	0.068	0.982 (0.015)	1.759	0.999 (<0.001)	0.069	0.976 (0.016)	2.432
Guidance (30%, 3%)	SMP	Non-breeding	All consented Projects	62.88	0.00060	0.999 (<0.001)	0.071	0.982 (0.015)	1.801	0.999 (<0.001)	0.070	0.975 (0.016)	2.524

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
			plus Caledonia										
Guidance (30%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	48.98	0.00077	0.999 (<0.001)	0.092	0.976 (0.015)	2.364	0.999 (<0.001)	0.092	0.967 (0.016)	3.283
Guidance (30%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	82.56	0.00093	0.999 (<0.001)	0.110	0.972 (0.015)	2.822	0.999 (<0.001)	0.110	0.961 (0.016)	3.901

3.8 Copinsay SPA: Project Alone

3.8.1 Guillemot: Caledonia South

Table 3-36.: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Copinsay SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	3.35	0.00031	1.000 (0.001)	0.033	0.991 (0.020)	0.870	1.000 (0.001)	0.034	0.988 (0.022)	1.159

3.8.2 Guillemot: Proposed Development (Offshore)

Table 3-37: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Copinsay SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	2.47	0.00022	1.000 (0.001)	0.025	0.994 (0.021)	0.649	1.000 (0.001)	0.026	0.991 (0.022)	0.912
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	4.34	0.00040	1.000 (0.001)	0.046	0.988 (0.020)	1.212	1.000 (0.001)	0.044	0.984 (0.022)	1.650

3.9 Copinsay SPA: In-combination

3.9.1 Guillemot

Table 3-38: PVA results using Seabird PVA Tool for impacts apportioned to the Copinsay SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	All projects	2.96	0.00027	1.000 (0.001)	0.031	0.992 (0.015)	0.791	1.000 (<0.001)	0.031	0.989 (0.016)	1.095
Guidance (60%, 5%)	SMP	Breeding	All projects	4.94	0.00045	0.999 (0.001)	0.052	0.987 (0.015)	1.310	0.999 (<0.001)	0.051	0.982 (0.016)	1.790
Guidance (60%, 1%)	SMP	Non-breeding	All projects	2.56	0.00023	1.000 (0.001)	0.025	0.993 (0.015)	0.663	1.000 (<0.001)	0.026	0.991 (0.016)	0.942
Guidance (60%, 3%)	SMP	Non-breeding	All projects	7.67	0.00069	0.999 (0.001)	0.077	0.980 (0.015)	1.986	0.999 (<0.001)	0.077	0.973 (0.016)	2.749
Applicant (50%, 1%)	SMP	Annual total	All projects	2.95	0.00027	1.000 (0.001)	0.031	0.992 (0.015)	0.791	1.000 (<0.001)	0.032	0.989 (0.016)	1.084
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All projects	5.52	0.00050	0.999 (0.001)	0.058	0.985 (0.015)	1.453	0.999 (<0.001)	0.057	0.980 (0.016)	2.020

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All projects	12.61	0.00115	0.999 (0.001)	0.129	0.967 (0.015)	3.266	0.999 (<0.001)	0.129	0.980 (0.016)	4.548
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	7.60	0.00027	1.000 (0.001)	0.031	0.992 (0.021)	0.825	1.000 (0.001)	0.031	0.989 (0.022)	1.105
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	12.66	0.00045	0.999 (0.001)	0.050	0.987 (0.020)	1.283	0.999 (0.001)	0.051	0.982 (0.022)	1.806
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.85	0.00023	1.000 (0.001)	0.025	0.993 (0.020)	0.655	1.000 (0.001)	0.025	0.991 (0.022)	0.931
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	10.26	0.00070	0.999 (0.001)	0.078	0.980 (0.020)	2.003	0.999 (0.001)	0.078	0.972 (0.022)	2.819
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	4.96	0.00027	1.000 (0.001)	0.031	0.992 (0.020)	0.846	1.000 (0.001)	0.032	0.989 (0.022)	1.117
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	11.02	0.00050	0.999 (0.001)	0.058	0.985 (0.020)	1.500	0.999 (0.001)	0.058	0.979 (0.022)	2.064
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	22.92	0.00115	0.999 (0.001)	0.129	0.967 (0.020)	3.287	0.999 (0.001)	0.130	0.954 (0.021)	4.590

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	2.96	0.00026	1.000 (<0.001)	0.029	0.993 (0.013)	0.746	1.000 (<0.001)	0.029	0.989 (0.014)	1.065
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	4.94	0.00043	1.000 (<0.001)	0.048	0.987 (0.013)	1.257	1.000 (<0.001)	0.048	0.983 (0.014)	1.747
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.95	0.00026	1.000 (<0.001)	0.029	0.992 (0.013)	0.782	1.000 (<0.001)	0.030	0.989 (0.014)	1.097
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	5.52	0.00042	1.000 (<0.001)	0.048	0.988 (0.013)	1.236	1.000 (<0.001)	0.049	0.983 (0.014)	1.738

3.10 Hoy SPA: Project Alone

3.10.1 Guillemot: Caledonia South

Table 3-39: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Hoy SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	4.69	0.00029	1.000 (<0.001)	0.034	0.991 (0.018)	0.863	1.000 (<0.001)	0.034	0.988 (0.019)	1.210

3.10.2 Guillemot: Proposed Development (Offshore)

Table 3-40: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Hoy SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	6.04	0.00037	1.000 (0.001)	0.042	0.989 (0.017)	1.131	1.000 (<0.001)	0.041	0.985 (0.018)	1.526
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	6.04	0.00021	1.000 (0.004)	0.025	0.994 (0.014)	0.645	1.000 (<0.001)	0.026	0.991 (0.015)	0.908

3.10.3 Puffin: Caledonia North

Table 3-41: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from Caledonia North alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.08	0.00022	1.000 (0.008)	0.039	0.992 (0.249)	0.798	1.000 (0.007)	0.033	0.990 (0.298)	0.998
Guidance (60%, 5%)	SMP	Breeding	0.13	0.00037	0.999 (0.008)	0.051	0.989 (0.249)	1.145	1.000 (0.007)	0.049	0.984 (0.297)	1.645
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	0.10	0.00054	0.999 (0.008)	0.053	0.987 (0.257)	1.333	1.000 (0.007)	0.028	0.988 (0.307)	1.217
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	0.19	0.00028	0.999 (0.008)	0.107	0.980 (0.256)	1.982	0.999 (0.007)	0.074	0.980 (0.300)	2.011

3.10.4 Puffin: Caledonia South

Table 3-42: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.07	0.00021	1.000 (0.008)	0.045	0.991 (0.250)	0.913	1.000 (0.007)	0.022	0.992 (0.300)	0.813
Guidance (60%, 5%)	SMP	Breeding	0.12	0.00034	0.999 (0.008)	0.068	0.986 (0.251)	1.408	0.999 (0.007)	0.046	0.986 (0.297)	1.421
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	0.10	0.00026	0.999 (0.008)	0.060	0.989 (0.252)	1.064	1.000 (0.007)	0.038	0.988 (0.296)	1.202
Guidance (60%, 5%; 60%, 1%)	SMP	Annual Total	0.19	0.00052	0.999 (0.008)	0.081	0.983 (0.252)	1.692	0.999 (0.007)	0.070	0.980 (0.300)	1.983

3.10.5 Puffin: Proposed Development (Offshore)

Table 3-43: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.13	0.00035	1.000 (0.010)	0.029	0.991 (0.297)	0.939	1.000 (0.009)	0.047	0.987 (0.416)	1.342
Guidance (60%, 5%)	SMP	Breeding	0.21	0.00058	0.999 (0.010)	0.081	0.983 (0.300)	1.695	0.999 (0.009)	0.076	0.971 (0.406)	2.857
Guidance (60%, 3%)	SMP	Non-Breeding	0.11	0.00030	1.000 (0.010)	0.034	0.990 (0.308)	0.998	0.999 (0.009)	0.057	0.975 (0.414)	2.490
Applicant (50%, 1%)	SMP	Annual total	0.08	0.00022	1.000 (0.008)	0.031	0.992 (0.250)	0.821	1.000 (0.007)	0.037	0.991 (0.300)	0.895
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	0.16	0.00045	0.999 (0.010)	0.055	0.988 (0.297)	1.177	0.999 (0.009)	0.053	0.982 (0.409)	1.802
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	0.32	0.00089	0.999 (0.010)	0.100	0.978 (0.300)	2.154	0.999 (0.009)	0.086	0.968 (0.397)	3.209

3.11 Hoy SPA: In-combination

3.11.1 Guillemot

Table 3-44: PVA results using Seabird PVA Tool for impacts apportioned to the Hoy SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	All Projects	5.19	0.00032	1.000 (0.001)	0.037	0.990 (0.018)	0.961	1.000 (<0.001)	0.036	0.987 (0.018)	1.308
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	4.13	0.00025	1.000 (0.001)	0.029	0.992 (0.018)	0.760	1.000 (<0.001)	0.029	0.989 (0.018)	1.052
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	8.23	0.00050	0.999 (0.001)	0.056	0.985 (0.017)	1.490	0.999 (<0.001)	0.055	0.980 (0.018)	2.040
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	5.19	0.00032	1.000 (0.001)	0.037	0.990 (0.018)	0.961	1.000 (<0.001)	0.036	0.987 (0.018)	1.308
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.13	0.00025	1.000 (0.001)	0.029	0.992 (0.018)	0.760	1.000 (<0.001)	0.029	0.989 (0.018)	1.052

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	8.23	0.00050	0.999 (0.001)	0.056	0.985 (0.017)	1.490	0.999 (<0.001)	0.055	0.980 (0.018)	2.040
Guidance (60%, 5%)	Citation	Breeding	All Projects	5.19	0.00050	1.000 (<0.001)	0.034	0.991 (0.014)	0.904	1.000 (<0.001)	0.035	0.988 (0.015)	1.238
Guidance (60%, 5%)	Citation	Annual Total	All consented Projects plus Caledonia	5.19	0.00050	1.000 (<0.001)	0.034	0.991 (0.014)	0.904	1.000 (<0.001)	0.035	0.988 (0.015)	1.238

3.12 Marwick Head SPA: Project Alone

3.12.1 Guillemot: Caledonia South

Table 3-45: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Marwick Head SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	2.85	0.00022	1.000 (0.001)	0.027	0.993 (0.019)	0.690	1.000 (0.001)	0.025	0.991 (0.020)	0.919

3.12.2 Guillemot: Proposed Development (Offshore)

Table 3-46: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Marwick Head SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	3.55	0.00028	1.000 (0.001)	0.031	0.992 (0.019)	0.837	1.000 (0.001)	0.031	0.989 (0.020)	1.118

3.13 Marwick Head SPA: In-combination

3.13.1 Guillemot

Table 3-47: PVA results using Seabird PVA Tool for impacts apportioned to the Marwick Head SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Non-breeding	All Projects	2.64	0.00021	1.000 (0.001)	0.025	0.993 (0.019)	0.655	1.000 (<0.001)	0.023	0.991 (0.020)	0.884
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	2.66	0.00021	1.000 (0.001)	0.024	0.993 (0.019)	0.663	1.000 (0.001)	0.024	0.991 (0.020)	0.890
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	5.60	0.00044	0.999 (0.001)	0.051	0.987 (0.019)	1.330	0.999 (0.001)	0.051	0.982 (0.020)	1.829
Guidance (60%,5%)	SMP	Breeding	All consented Projects plus Caledonia	2.96	0.00023	1.000 (0.001)	0.027	0.993 (0.019)	0.694	1.000 (0.001)	0.026	0.990 (0.020)	0.969
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.64	0.00021	1.000 (0.001)	0.023	0.994 (0.019)	0.592	1.000 (0.001)	0.023	0.991 (0.020)	0.852

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	2.66	0.00021	1.000 (0.001)	0.023	0.993 (0.019)	0.653	1.000 (0.001)	0.024	0.991 (0.021)	0.868
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	5.60	0.00044	0.999 (0.001)	0.050	0.987 (0.019)	1.275	0.999 (0.001)	0.050	0.982 (0.020)	1.763

3.14 Calf of Eday SPA: Project Alone

3.14.1 Guillemot: Caledonia South

Table 3-48: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Calf of Eday SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	Citation	Annual Total	1.59	0.00022	1.000 (0.001)	0.024	0.993 (0.026)	0.681	1.000 (0.001)	0.024	0.991 (0.028)	0.859

3.14.2 Guillemot: Proposed Development (Offshore)

Table 3-49: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Calf of Eday SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	SMP	Annual Total	1.98	0.00027	1.000 (0.001)	0.032	0.992 (0.026)	0.843	1.000 (0.001)	0.030	0.989 (0.027)	1.083

3.15 West Westray SPA: Project Alone

3.15.1 Guillemot: Caledonia South

Table 3-50: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the West Westray SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	Citation	Annual Total	8.26	0.00020	1.000 (<0.001)	0.023	0.994 (0.011)	0.619	1.000 (<0.001)	0.024	0.992 (0.011)	0.842

3.15.2 Guillemot: Proposed Development (Offshore)

Table 3-51: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the West Westray SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	SMP	Annual Total	10.17	0.00025	1.000 (<0.001)	0.028	0.993 (0.011)	0.733	1.000 (<0.001)	0.028	0.990 (0.012)	1.018
Guidance (60%,5%;60%,3%)	Citation	Annual Total	10.17	0.00025	1.000 (<0.001)	0.028	0.993 (0.011)	0.725	1.000 (<0.001)	0.028	0.990 (0.011)	1.025

3.16 West Westray SPA: In-combination

3.16.1 Guillemot

Table 3-52: PVA results using Seabird PVA Tool for impacts apportioned to the West Westray SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Non-breeding	All Projects	8.33	0.00030	1.000 (<0.001)	0.024	0.994 (0.010)	0.611	1.000 (<0.001)	0.024	0.992 (0.011)	0.830
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	12.30	0.00020	1.000 (<0.001)	0.035	0.991 (0.011)	0.901	1.000 (<0.001)	0.035	0.988 (0.011)	1.222
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	8.33	0.00030	1.000 (<0.001)	0.024	0.994 (0.010)	0.611	1.000 (<0.001)	0.024	0.992 (0.011)	0.830
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	12.30	0.00020	1.000 (<0.001)	0.035	0.991 (0.011)	0.901	1.000 (<0.001)	0.035	0.988 (0.011)	1.222
Guidance (60%,3%)	Citation	Non-breeding	All Projects	8.33	0.00029	1.000 (<0.001)	0.023	0.994 (0.011)	0.596	1.000 (<0.001)	0.023	0.992 (0.012)	0.830

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	12.30	0.00020	1.000 (<0.001)	0.033	0.991 (0.011)	0.855	1.000 (<0.001)	0.033	0.988 (0.012)	1.161
Guidance (60%,3%)	Citation	Non-breeding	All consented Projects plus Caledonia	8.33	0.00029	1.000 (<0.001)	0.023	0.994 (0.011)	0.596	1.000 (<0.001)	0.023	0.992 (0.012)	0.830
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	12.30	0.00020	1.000 (<0.001)	0.033	0.991 (0.011)	0.855	1.000 (<0.001)	0.033	0.988 (0.012)	1.161

3.17 Sule Skerry and Sule Stack SPA: Project Alone

3.17.1 Puffin: Proposed Development (Offshore)

Table 3-53: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Sule Skerry and Sule Stack SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.02	0.00012	1.000 (0.001)	0.014	0.996 (0.016)	0.409	1.000 (<0.001)	0.014	0.995 (0.019)	0.537
Guidance (60%, 5%)	SMP	Breeding	18.37	0.01924	0.977 (0.001)	2.275	0.550 (0.011)	45.038	0.977 (0.001)	2.274	0.437 (0.011)	56.349
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	18.38	0.00019	1.000 (0.001)	0.023	0.993 (0.015)	0.661	1.000 (<0.001)	0.023	0.991 (0.019)	0.864
Guidance (60%, 3%)	Citation	Breeding	11.02	0.00012	1.000 (0.001)	0.015	0.996 (0.017)	0.362	1.000 (0.001)	0.015	0.995 (0.021)	0.507
Guidance (60%, 5%)	Citation	Breeding	18.37	0.00020	1.000 (0.001)	0.024	0.994 (0.017)	0.633	1.000 (0.001)	0.023	0.991 (0.020)	0.850
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	18.38	0.00020	1.000 (0.001)	0.024	0.994 (0.017)	0.612	1.000 (0.001)	0.024	0.992 (0.021)	0.843

3.18 Sule Skerry and Sule Stack SPA: In-combination

3.18.1 Puffin

Table 3-54: PVA results using Seabird PVA Tool for impacts apportioned to the Sule Skerry and Sule Stack SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	208.77	0.00219	0.997 (0.001)	0.260	0.934 (0.015)	6.575	0.997 (0.001)	0.260	0.910 (0.018)	9.007
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	348.10	0.00365	0.996 (0.001)	0.432	0.893 (0.014)	10.653	0.996 (0.001)	0.430	0.856 (0.017)	14.380
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	208.74	0.00219	0.997 (0.001)	0.258	0.934 (0.015)	6.558	0.997 (<0.001)	0.259	0.910 (0.017)	8.965
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	348.02	0.00354	0.996 (0.001)	0.432	0.893 (0.014)	10.658	0.996 (0.001)	0.432	0.856 (0.017)	14.448
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	79.05	0.00083	0.999 (0.001)	0.097	0.975 (0.015)	2.533	0.999 (<0.001)	0.098	0.965 (0.019)	3.475

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	131.86	0.00128	0.998 (0.001)	0.164	0.958 (0.015)	4.189	0.998 (<0.001)	0.163	0.943 (0.018)	5.738
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects	208.77	0.00223	0.997 (0.001)	0.263	0.934 (0.015)	6.642	0.997 (0.001)	0.264	0.909 (0.018)	9.087
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	348.10	0.00371	0.996 (0.001)	0.440	0.892 (0.015)	10.800	0.996 (0.001)	0.439	0.853 (0.017)	14.683
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	208.74	0.00223	0.997 (0.001)	0.264	0.934 (0.015)	6.613	0.997 (0.001)	0.264	0.909 (0.018)	9.072
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	348.02	0.00371	0.996 (0.001)	0.439	0.892 (0.014)	10.803	0.996 (0.001)	0.439	0.853 (0.017)	14.670
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	79.05	0.00084	0.999 (0.001)	0.100	0.974 (0.016)	2.574	0.999 (0.001)	0.101	0.964 (0.019)	3.569
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	131.86	0.00141	0.998 (0.001)	0.167	0.958 (0.015)	4.232	0.998 (0.001)	0.167	0.942 (0.018)	5.813

Table 3-55: PVA results using Seabird PVA Tool for impacts apportioned to the Sule Skerry and Sule Stack SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	201.48	0.00211	0.997 (0.001)	0.251	0.936 (0.015)	6.353	0.998 (0.001)	0.250	0.914 (0.017)	8.648
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	335.97	0.00352	0.996 (0.001)	0.417	0.897 (0.014)	10.301	0.996 (0.001)	0.417	0.860 (0.017)	14.018
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	201.46	0.00211	0.998 (0.001)	0.249	0.937 (0.015)	6.307	0.998 (0.001)	0.249	0.914 (0.018)	8.584
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	335.89	0.00352	0.996 (0.001)	0.417	0.897 (0.014)	10.311	0.996 (0.001)	0.417	0.860 (0.017)	13.988
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	71.77	0.00075	0.999 (0.001)	0.089	0.977 (0.015)	2.336	0.999 (0.001)	0.089	0.968 (0.018)	3.181
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	119.72	0.00125	0.999 (0.001)	0.149	0.962 (0.015)	3.810	0.999 (<0.001)	0.149	0.948 (0.018)	5.223
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects	201.48	0.00215	0.997 (0.001)	0.255	0.936 (0.015)	6.440	0.997 (0.001)	0.255	0.912 (0.018)	8.803

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	335.97	0.00358	0.996 (0.001)	0.424	0.896 (0.014)	10.441	0.996 (0.001)	0.425	0.858 (0.017)	14.198
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	201.46	0.00215	0.997 (0.001)	0.254	0.936 (0.015)	6.382	0.997 (0.001)	0.255	0.912 (0.018)	8.753
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	335.89	0.00358	0.996 (0.001)	0.422	0.896 (0.014)	10.445	0.996 (0.001)	0.424	0.858 (0.017)	14.164
Guidance (60%,3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	71.77	0.00077	0.999 (0.001)	0.089	0.977 (0.015)	2.306	0.999 (0.001)	0.091	0.968 (0.019)	3.205
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	119.72	0.00128	0.998 (0.001)	0.151	0.961 (0.015)	3.856	0.998 (0.001)	0.151	0.947 (0.019)	5.300
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non- breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).													

3.19 Rousay SPA: Project Alone

3.19.1 Guillemot: Caledonia South

Table 3-56: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Rousay SPA from Caledonia South alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	Citation	Annual Total	1.68	0.00021	1.000 (0.001)	0.024	0.993 (0.026)	0.656	1.000 (0.001)	0.024	0.991 (0.027)	0.901

3.19.2 Guillemot: Proposed Development (Offshore)

Table 3-57: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Rousay SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	SMP	Annual Total	2.08	0.00026	1.000 (0.001)	0.027	0.993 (0.025)	0.747	1.000 (0.001)	0.027	0.990 (0.027)	1.013
Guidance (60%,5%;60%,3%)	Citation	Annual Total	2.08	0.00022	1.000 (0.001)	0.024	0.994 (0.023)	0.572	1.000 (0.001)	0.024	0.992 (0.024)	0.815

3.20 Fair Isle SPA: Project Alone

3.20.1 Puffin: Proposed Development (Offshore)

Table 3-58: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Fair Isle SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%;60%,3%)	SMP	Annual Total	1.05	0.00021	1.000 (0.002)	0.025	0.992 (0.056)	0.763	1.000 (0.002)	0.026	0.991 (0.066)	0.898

3.20.2 Gannet: Caledonia South

Table 3-59: PVA results using Seabird PVA Tool for impacts to gannet apportioned to the Fair Isle SPA from Caledonia South alone showing combined distributional responses and collision risk project alone outputs (Guidance Approach to macro-avoidance).

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Annual total	0.32	0.00022	1.000 (0.002)	0.027	0.993 (0.068)	0.714	1.000 (0.002)	0.024	0.991 (0.075)	0.869

3.20.3 Gannet: Proposed Development (Offshore)

Table 3-60: PVA results using Seabird PVA Tool for impacts to gannet apportioned to the Fair Isle SPA from the Proposed Development (Offshore) alone showing combined distributional responses and collision project alone outputs (Guidance Approach to macro-avoidance).

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Breeding	0.35	0.00025	1.000 (0.002)	0.028	0.994 (0.069)	0.612	1.000 (0.002)	0.027	0.989 (0.076)	1.089
Guidance (70%, 3%)	Citation	Annual Total	0.44	0.00029	1.000 (0.002)	0.035	0.991 (0.068)	0.946	1.000 (0.002)	0.034	0.987 (0.076)	1.293

3.21 Fair Isle SPA: In-combination

3.21.1 Puffin

Table 3-61: PVA results using Seabird PVA Tool for impacts apportioned to the Fair Isle SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Breeding	All Projects	0.30	0.00039	1.000 (0.002)	0.048	0.987 (0.061)	1.316	1.000 (0.002)	0.047	0.983 (0.075)	1.722
Guidance (60%,5%)	SMP	Breeding	All Projects	1.09	0.00027	1.000 (0.002)	0.031	0.992 (0.062)	0.776	1.000 (0.002)	0.036	0.988 (0.075)	1.226
Applicant (50%,1%)	SMP	Non-Breeding	All Projects	2.60	0.00039	1.000 (0.002)	0.043	0.988 (0.063)	1.166	1.000 (0.002)	0.047	0.983 (0.076)	1.673
Guidance (60%,1%)	SMP	Non-Breeding	All Projects	3.12	0.00047	0.999 (0.002)	0.062	0.985 (0.062)	1.536	0.999 (0.002)	0.057	0.979 (0.074)	2.122
Guidance (60%,3%)	SMP	Non-Breeding	All Projects	9.36	0.00140	0.998 (0.002)	0.166	0.959 (0.061)	4.064	0.998 (0.002)	0.164	0.943 (0.073)	5.713
Applicant (50%,1%)	SMP	Annual Total	All Projects	2.90	0.00044	1.000 (0.002)	0.047	0.989 (0.061)	1.130	0.999 (0.002)	0.052	0.981 (0.075)	1.922

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	4.21	0.00063	0.999 (0.002)	0.074	0.981 (0.062)	1.870	0.999 (0.002)	0.075	0.972 (0.075)	2.768
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	11.17	0.00168	0.998 (0.002)	0.198	0.950 (0.059)	5.015	0.998 (0.002)	0.200	0.930 (0.072)	6.961
Guidance (60%,5%)	SMP	Breeding	All Projects excluding Berwick Bank	1.55	0.00023	1.000 (0.002)	0.027	0.994 (0.063)	0.624	1.000 (0.002)	0.029	0.989 (0.076)	1.087
Applicant (50%,1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	1.74	0.00026	1.000 (0.002)	0.035	0.991 (0.062)	0.912	1.000 (0.002)	0.035	0.988 (0.075)	1.219
Guidance (60%,1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	2.08	0.00031	1.000 (0.002)	0.040	0.989 (0.062)	1.093	1.000 (0.002)	0.041	0.985 (0.075)	1.528
Guidance (60%,3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	6.25	0.00094	0.999 (0.002)	0.108	0.972 (0.061)	2.770	0.999 (0.002)	0.113	0.960 (0.075)	4.004
Applicant (50%,1%)	SMP	Annual Total	All Projects excluding Berwick Bank	2.00	0.00030	1.000 (0.002)	0.035	0.992 (0.062)	0.800	1.000 (0.002)	0.035	0.988 (0.076)	1.216
Guidance (60% 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.02	0.00045	0.999 (0.002)	0.054	0.987 (0.062)	1.349	0.999 (0.002)	0.057	0.980 (0.075)	2.035

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	7.80	0.00117	0.999 (0.002)	0.139	0.965 (0.060)	3.459	0.999 (0.002)	0.136	0.952 (0.073)	4.761
Guidance (60%,5%)	SMP	Breeding	All consented Projects plus Caledonia	1.55	0.00023	1.000 (0.002)	0.029	0.992 (0.062)	0.775	1.000 (0.002)	0.028	0.989 (0.075)	1.147
Applicant (50%,1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	1.74	0.00026	1.000 (0.002)	0.027	0.991 (0.063)	0.883	1.000 (0.002)	0.033	0.988 (0.074)	1.187
Guidance (60%,1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	2.08	0.00031	1.000 (0.002)	0.039	0.990 (0.063)	0.973	1.000 (0.002)	0.040	0.985 (0.075)	1.528
Guidance (60%,3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	6.25	0.00094	0.999 (0.002)	0.113	0.971 (0.061)	2.923	0.999 (0.002)	0.117	0.959 (0.072)	4.096
Applicant (50%,1%)	SMP	Annual Total	All consented Projects plus Caledonia	2.00	0.00030	1.000 (0.002)	0.038	0.989 (0.062)	1.086	1.000 (0.002)	0.036	0.985 (0.075)	1.462
Guidance (60% 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.02	0.00045	0.999 (0.002)	0.052	0.986 (0.062)	1.408	0.999 (0.002)	0.054	0.980 (0.075)	1.958
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	7.80	0.00117	0.999 (0.002)	0.135	0.966 (0.061)	3.442	0.999 (0.002)	0.136	0.950 (0.073)	4.957

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	Citation	Non-Breeding	All Projects	9.36	0.00041	1.000 (0.001)	0.049	0.987 (0.034)	1.313	0.999 (0.001)	0.050	0.982 (0.041)	1.786
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	11.17	0.00049	0.999 (0.001)	0.054	0.986 (0.033)	1.411	0.999 (0.001)	0.058	0.980 (0.040)	2.029
Guidance (60%,3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	6.25	0.00027	1.000 (0.001)	0.028	0.992 (0.034)	0.769	1.000 (0.001)	0.029	0.989 (0.041	1.103
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	7.80	0.00034	1.000 (0.001)	0.042	0.990 (0.034)	1.039	1.000 (0.001)	0.040	0.986 (0.041)	1.441

Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

Table 3-62: PVA results using Seabird PVA Tool for impacts apportioned to the Fair Isle SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Non-breeding	All Projects	2.72	0.00041	0.999 (0.002)	0.051	0.986 (0.062)	1.372	0.999 (0.002)	0.054	0.981 (0.075)	1.883
Guidance (60%,1%)	SMP	Non-Breeding	All Projects	3.26	0.00049	0.999 (0.002)	0.057	0.985 (0.062)	1.488	0.999 (0.002)	0.057	0.980 (0.075)	2.036
Guidance (60%,3%)	SMP	Non-Breeding	All Projects	9.77	0.00147	0.998 (0.002)	0.173	0.957 (0.060)	4.348	0.998 (0.002)	0.176	0.940 (0.073)	6.040
Guidance (50%, 1%	SMP	Annual Total	All Projects	2.90	0.00044	1.000 (0.002)	0.049	0.987 (0.062)	1.259	0.999 (0.002)	0.052	0.983 (0.076)	1.703
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	3.93	0.00059	0.999 (0.002)	0.106	0.974 (0.061)	2.648	0.999 (0.002)	0.098	0.965 (0.074)	3.544
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	10.89	0.00163	0.998 (0.002)	0.199	0.950 (0.060)	4.955	0.998 (0.002)	0.200	0.931 (0.071)	6.933
Applicant (50%,1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	1.85	0.00028	1.000 (0.002)	0.025	0.994 (0.062)	0.597	1.000 (0.002)	0.033	0.988 (0.074)	1.155
Guidance (60%,1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	2.22	0.00033	1.000 (0.002)	0.036	0.990 (0.062)	0.991	1.000 (0.002)	0.036	0.987 (0.075)	1.324

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	6.67	0.00100	0.999 (0.002)	0.112	0.970 (0.061)	3.000	0.999 (0.002)	0.117	0.958 (0.074)	4.198
Guidance (50%, 1%	SMP	Annual Total	All Projects excluding Berwick Bank	2.00	0.00030	1.000 (0.002)	0.032	0.991 (0.063)	0.921	1.000 (0.002)	0.034	0.988 (0.075)	1.211
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	2.74	0.00041	1.000 (0.002)	0.044	0.988 (0.061)	1.158	1.000 (0.002)	0.046	0.985 (0.075)	1.461
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	7.53	0.00113	0.999 (0.002)	0.131	0.965 (0.060)	3.452	0.999 (0.002)	0.134	0.952 (0.073)	4.772
Applicant (50%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	1.85	0.00028	1.000 (0.002)	0.025	0.994 (0.062)	0.597	1.000 (0.002)	0.033	0.988 (0.074)	1.155
Guidance (60%,1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	2.22	0.00033	1.000 (0.002)	0.036	0.990 (0.062)	0.991	1.000 (0.002)	0.036	0.987 (0.075)	1.324
Guidance (60%,3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	6.67	0.00100	0.999 (0.002)	0.112	0.970 (0.061)	3.000	0.999 (0.002)	0.117	0.958 (0.074)	4.198
Guidance (50%, 1%	SMP	Annual Total	All consented Projects plus Caledonia	2.00	0.00030	1.000 (0.002)	0.032	0.991 (0.063)	0.921	1.000 (0.002)	0.034	0.988 (0.075)	1.211

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	2.74	0.00041	1.000 (0.002)	0.044	0.988 (0.061)	1.158	1.000 (0.002)	0.046	0.985 (0.075)	1.461
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	7.53	0.00113	0.999 (0.002)	0.131	0.965 (0.060)	3.452	0.999 (0.002)	0.134	0.952 (0.073)	4.772
Applicant (50%,1%)	Citation	Non-breeding	All Projects	2.72	0.00042	1.000 (0.001)	0.049	0.987 (0.033)	1.254	0.999 (0.001)	0.050	0.982 (0.040)	1.815
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	10.89	0.00047	0.999 (0.001)	0.057	0.986 (0.033)	1.420	0.999 (0.001)	0.056	0.980 (0.040)	1.981
Guidance (60%,5%; 60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	6.67	0.00029	1.000 (0.001)	0.034	0.991 (0.034)	0.928	1.000 (0.001)	0.037	0.987 (0.040)	1.270
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	7.53	0.00033	1.000 (0.001)	0.041	0.990 (0.034)	1.020	1.000 (0.001)	0.038	0.986 (0.040)	1.402
Guidance (60%,5%; 60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	6.67	0.00029	1.000 (0.001)	0.033	0.991 (0.034)	0.891	1.000 (0.001)	0.033	0.988 (0.041)	1.227

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density independent counter (actual metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	7.53	0.00033	1.000 (0.001)	0.036	0.990 (0.034)	0.960	1.000 (0.001)	0.039	0.988 (0.041)	1.362

Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

3.22 Foula SPA: In-combination

3.22.1 Puffin

Table 3-63: PVA results using Seabird PVA Tool for impacts apportioned to the Foula SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Non-breeding	All Projects	5.46	0.00086	0.999 (0.002)	0.096	0.975 (0.062)	2.473	0.999 (0.002)	0.096	0.964 (0.075)	3.553
Guidance (60%,1%)	SMP	Non-breeding	All Projects	6.56	0.00103	0.999 (0.002)	0.122	0.968 (0.062)	3.194	0.999 (0.002)	0.125	0.956 (0.075)	4.369
Guidance (60%,3%)	SMP	Non-breeding	All Projects	19.67	0.00310	0.996 (0.002)	0.368	0.909 (0.058)	9.126	0.996 (0.002)	0.371	0.875 (0.069)	12.549
Applicant (50%,1%)	SMP	Annual Total	All Projects	5.58	0.00088	0.999 (0.002)	0.106	0.972 (0.062)	2.808	0.999 (0.002)	0.105	0.962 (0.073)	3.772
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	6.96	0.00110	0.999 (0.002)	0.130	0.968 (0.061)	3.232	0.999 (0.002)	0.128	0.953 (0.073)	4.694
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	20.34	0.00320	0.996 (0.002)	0.379	0.906 (0.058)	9.383	0.996 (0.002)	0.377	0.873 (0.068)	12.746

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.65	0.00057	0.999 (0.002)	0.066	0.983 (0.063)	1.732	0.999 (0.002)	0.068	0.975 (0.076)	2.480
Guidance (60%,1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.38	0.00069	0.999 (0.002)	0.082	0.977 (0.061)	2.285	0.999 (0.002)	0.086	0.968 (0.074)	3.170
Guidance (60%,3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.14	0.00207	0.998 (0.002)	0.244	0.938 (0.060)	6.159	0.998 (0.002)	0.245	0.915 (0.072)	8.487
Applicant (50%,1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.76	0.00059	0.999 (0.002)	0.078	0.981 (0.061)	1.888	0.999 (0.002)	0.070	0.975 (0.074)	2.479
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	4.78	0.00075	0.999 (0.002)	0.085	0.978 (0.062)	2.230	0.999 (0.002)	0.083	0.970 (0.076)	3.016
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	13.81	0.00217	0.997 (0.002)	0.254	0.936 (0.059)	6.443	0.997 (0.002)	0.258	0.910 (0.071)	8.968
Applicant (50%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.65	0.00057	0.999 (0.002)	0.066	0.983 (0.063)	1.732	0.999 (0.002)	0.068	0.975 (0.076)	2.480
Guidance (60%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	4.38	0.00069	0.999 (0.002)	0.082	0.977 (0.061)	2.285	0.999 (0.002)	0.086	0.968 (0.074)	3.170

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	13.14	0.00207	0.998 (0.002)	0.244	0.938 (0.060)	6.159	0.998 (0.002)	0.245	0.915 (0.072)	8.487
Applicant (50%,1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.76	0.00059	0.999 (0.002)	0.078	0.981 (0.061)	1.888	0.999 (0.002)	0.070	0.975 (0.074)	2.479
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.78	0.00075	0.999 (0.002)	0.085	0.978 (0.062)	2.230	0.999 (0.002)	0.083	0.970 (0.076)	3.016
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	13.81	0.00217	0.997 (0.002)	0.254	0.936 (0.059)	6.443	0.997 (0.002)	0.258	0.910 (0.071)	8.968
Guidance (60%,3%)	Citation	Non-breeding	All Projects	19.67	0.00020	1.000 (0.001)	0.023	0.994 (0.016)	0.575	1.000 (0.001)	0.023	0.991 (0.020)	0.854
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	20.34	0.00021	1.000 (0.001)	0.024	0.994 (0.017)	0.621	1.000 (0.001)	0.024	0.991 (0.020)	0.899

Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

Table 3-64: PVA results using Seabird PVA Tool for impacts apportioned to the Foula SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Non-breeding	All Projects	5.71	0.00090	0.999 (0.002)	0.102	0.974 (0.062)	2.603	0.999 (0.002)	0.101	0.963 (0.074)	3.660
Guidance (60%,1%)	SMP	Non-breeding	All Projects	6.85	0.00108	0.999 (0.002)	0.123	0.968 (0.062)	3.194	0.999 (0.002)	0.120	0.956 (0.074)	4.365
Guidance (60%,3%)	SMP	Non-breeding	All Projects	20.54	0.00323	0.996 (0.002)	0.377	0.905 (0.059)	9.501	0.996 (0.002)	0.379	0.872 (0.070)	12.831
Applicant (50%,1%)	SMP	Annual Total	All Projects	5.76	0.00091	0.999 (0.002)	0.108	0.973 (0.061)	2.654	0.999 (0.002)	0.108	0.963 (0.074)	3.707
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects	7.05	0.00111	0.999 (0.002)	0.125	0.967 (0.061)	3.307	0.999 (0.002)	0.130	0.954 (0.074)	4.618
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects	20.88	0.00329	0.996 (0.002)	0.387	0.903 (0.059)	9.713	0.996 (0.002)	0.387	0.869 (0.069)	13.090
Guidance (60%,3%)	Citation	Non-breeding	All Projects	20.54	0.00021	1.000 (0.001)	0.025	0.994 (0.017)	0.627	1.000 (0.001)	0.026	0.991 (0.020)	0.873
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	All Projects	20.88	0.00022	1.000 (0.001)	0.025	0.994 (0.016)	0.636	1.000 (0.001)	0.026	0.991 (0.020)	0.920

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%,1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.89	0.00061	0.999 (0.002)	0.073	0.981 (0.063)	1.860	0.999 (0.002)	0.073	0.974 (0.075)	2.571
Guidance (60%,1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.67	0.00074	0.999 (0.002)	0.091	0.977 (0.062)	2.282	0.999 (0.002)	0.086	0.970 (0.074)	2.966
Guidance (60%,3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	14.01	0.00221	0.997 (0.002)	0.259	0.935 (0.060)	6.532	0.997 (0.002)	0.261	0.910 (0.071)	9.029
Applicant (50%,1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.95	0.00062	0.999 (0.002)	0.076	0.980 (0.062)	2.000	0.999 (0.002)	0.074	0.973 (0.074)	2.699
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	4.87	0.00077	0.999 (0.002)	0.090	0.977 (0.062)	2.268	0.999 (0.002)	0.086	0.969 (0.073)	3.075
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	14.35	0.00226	0.997 (0.002)	0.270	0.934 (0.058)	6.629	0.997 (0.002)	0.269	0.909 (0.070)	9.149
Applicant (50%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.89	0.00061	0.999 (0.002)	0.074	0.981 (0.061)	1.910	0.999 (0.002)	0.072	0.974 (0.075)	2.616
Guidance (60%,1%)	SMP	Non-breeding	All consented Projects plus Caledonia	4.67	0.00074	0.999 (0.002)	0.089	0.976 (0.061)	2.353	0.999 (0.002)	0.089	0.969 (0.074)	3.133

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,3%)	SMP	Non-breeding	All consented Projects plus Caledonia	14.01	0.00221	0.997 (0.002)	0.260	0.935 (0.060)	6.540	0.997 (0.002)	0.265	0.909 (0.071)	9.096
Applicant (50%,1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.95	0.00062	0.999 (0.002)	0.069	0.981 (0.062)	1.921	0.999 (0.002)	0.073	0.975 (0.076)	2.540
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.87	0.00077	0.999 (0.002)	0.091	0.976 (0.062)	2.396	0.999 (0.002)	0.090	0.967 (0.076)	3.343
Guidance (60%,5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	14.35	0.00226	0.997 (0.002)	0.274	0.931 (0.059)	6.924	0.997 (0.002)	0.272	0.905 (0.070)	9.487
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).													

3.23 Forth Islands SPA: Project Alone

3.23.1 Puffin: Proposed Development (Offshore)

Table 3-65: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Forth Islands SPA from the Proposed Development (Offshore) alone showing distributional responses project alone outputs.

Approach	Data Source	Season	Predicted Mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	6.45	0.00023	1.000 (0.001)	0.029	0.994 (0.030)	0.640	1.000 (0.001)	0.028	0.991 (0.036)	0.902
Guidance (60%,5%;60%,3%)	Citation	Annual Total	6.45	0.00023	1.000 (0.001)	0.027	0.993 (0.030)	0.669	1.000 (0.001)	0.026	0.991 (0.036)	0.894

3.24 Forth Islands SPA: In-combination

3.24.1 Gannet

Table 3-66: PVA results using Seabird PVA Tool for impacts apportioned to the Forth Islands SPA gannet population showing combined distributional responses and collision risk In-combination outputs, with and without Berwick Bank (Guidance Approach to macro-avoidance).

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects	500.15	0.00332	0.996 (<0.001)	0.395	0.902 (0.008)	9.772	0.996 (<0.001)	0.394	0.868 (0.008)	13.244
Guidance (70%, 3%)	SMP	Breeding	All Projects	672.18	0.00447	0.995 (<0.001)	0.529	0.871 (0.008)	12.894	0.995 (<0.001)	0.529	0.826 (0.008)	17.392
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects	122.70	0.00082	0.999 (<0.001)	0.097	0.975 (0.009)	2.485	0.999 (<0.001)	0.096	0.966 (0.009)	3.402
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	252.11	0.00167	0.998 (<0.001)	0.199	0.950 (0.008)	5.034	0.998 (<0.001)	0.198	0.931 (0.009)	6.887
Applicant/Guidance (70%, 1%)	SMP	Annual total	All Projects	622.85	0.00414	0.995 (<0.001)	0.490	0.880 (0.008)	12.016	0.995 (<0.001)	0.490	0.838 (0.008)	16.214
Guidance (70%, 3%)	SMP	Annual total	All Projects	924.29	0.00614	0.993 (<0.001)	0.727	0.827 (0.008)	17.292	0.993 (<0.001)	0.727	0.769 (0.008)	23.108

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects	500.15	0.01558	1.000 (<0.001)	0.014	0.996 (0.016)	0.394	1.000 (<0.001)	0.013	0.995 (0.017)	0.511
Guidance (70%, 3%)	Citation	Breeding	All Projects	672.18	0.01556	0.982 (0.001)	1.844	0.616 (0.011)	38.361	0.982 (<0.001)	1.843	0.512 (0.010)	48.831
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects	122.70	0.00284	0.997 (<0.001)	0.337	0.916 (0.015)	8.447	0.997 (<0.001)	0.337	0.885 (0.016)	11.487
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	252.11	0.00584	0.993 (0.001)	0.690	0.835 (0.014)	16.522	0.993 (<0.001)	0.691	0.779 (0.014)	22.110
Applicant/Guidance (70%, 1%)	Citation	Annual total	All Projects	622.85	0.01442	0.983 (0.001)	1.707	0.639 (0.011)	36.123	0.983 (<0.001)	1.707	0.538 (0.011)	46.236
Guidance (70%, 3%)	Citation	Annual total	All Projects	924.29	0.02140	0.975 (0.001)	2.533	0.513 (0.010)	48.685	0.975 (0.001)	2.534	0.397 (0.009)	60.306
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects	500.15	0.00309	0.996 (<0.001)	0.366	0.909 (0.007)	9.102	0.996 (<0.001)	0.366	0.876 (0.008)	12.368
Guidance (70%, 3%)	Harris	Breeding	All Projects	672.18	0.00415	0.995 (<0.001)	0.492	0.880 (0.007)	12.020	0.995 (<0.001)	0.492	0.838 (0.008)	16.241
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects	122.70	0.00076	0.999 (<0.001)	0.089	0.977 (0.007)	2.309	0.999 (<0.001)	0.090	0.968 (0.008)	3.186
Guidance (70%, 3%)	Harris	Non-breeding	All Projects	252.11	0.00156	0.998 (<0.001)	0.184	0.953 (0.007)	4.677	0.998 (<0.001)	0.184	0.936 (0.008)	6.431

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Harris	Annual total	All Projects	622.85	0.00384	0.995 (<0.001)	0.456	0.888 (0.007)	11.208	0.995 (<0.001)	0.456	0.848 (0.007)	15.165
Guidance (70%, 3%)	Harris	Annual total	All Projects	924.29	0.00571	0.993 (<0.001)	0.676	0.838 (0.007)	16.173	0.993 (<0.001)	0.676	0.783 (0.007)	21.675
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	376.00	0.00250	0.997 (<0.001)	0.297	0.926 (0.008)	7.415	0.997 (<0.001)	0.296	0.899 (0.009)	10.124
Guidance (70%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	489.23	0.00325	0.996 (<0.001)	0.386	0.904 (0.008)	9.554	0.996 (<0.001)	0.386	0.870 (0.009)	12.982
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00079	0.999 (<0.001)	0.094	0.976 (0.008)	2.396	0.999 (<0.001)	0.093	0.967 (0.009)	3.290
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00161	0.998 (<0.001)	0.191	0.952 (0.008)	4.833	0.998 (<0.001)	0.190	0.934 (0.009)	6.613
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	494.53	0.00329	0.996 (<0.001)	0.390	0.903 (0.008)	9.651	0.996 (<0.001)	0.389	0.869 (0.008)	13.097

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	730.88	0.00486	0.994 (<0.001)	0.576	0.861 (0.008)	13.923	0.994 (<0.001)	0.575	0.813 (0.008)	18.744
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	376.00	0.00870	0.990 (0.001)	1.031	0.764 (0.012)	23.647	0.990 (<0.001)	1.031	0.688 (0.013)	31.190
Guidance (70%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	489.23	0.01132	0.987 (0.001)	1.341	0.704 (0.012)	29.642	0.987 (<0.001)	1.342	0.615 (0.012)	38.538
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00274	0.997 (<0.001)	0.325	0.918 (0.015)	8.172	0.997 (<0.001)	0.326	0.889 (0.016)	11.098
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00559	0.993 (0.001)	0.664	0.841 (0.014)	15.924	0.993 (<0.001)	0.663	0.787 (0.014)	21.338
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	494.53	0.01145	0.986 (0.001)	1.356	0.701 (0.012)	29.875	0.986 (<0.001)	1.356	0.612 (0.012)	38.828

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	730.88	0.01692	0.980 (0.001)	2.003	0.591 (0.010)	40.910	0.980 (<0.001)	2.003	0.483 (0.010)	51.741
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects excluding Berwick Bank	376.00	0.00232	0.997 (<0.001)	0.274	0.931 (0.007)	6.879	0.997 (<0.001)	0.274	0.906 (0.008)	9.415
Guidance (70%, 3%)	Harris	Breeding	All Projects excluding Berwick Bank	489.23	0.00302	0.996 (<0.001)	0.358	0.911 (0.007)	8.899	0.996 (<0.001)	0.358	0.879 (0.008)	12.113
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00073	0.999 (<0.001)	0.087	0.978 (0.007)	2.225	0.999 (<0.001)	0.086	0.969 (0.008)	3.060
Guidance (70%, 3%)	Harris	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00149	0.998 (<0.001)	0.176	0.955 (0.007)	4.480	0.998 (<0.001)	0.177	0.938 (0.008)	6.165
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All Projects excluding Berwick Bank	494.53	0.00305	0.996 (<0.001)	0.361	0.910 (0.007)	8.966	0.996 (<0.001)	0.361	0.878 (0.007)	12.197

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Annual Total	All Projects excluding Berwick Bank	730.88	0.00451	0.995 (<0.001)	0.535	0.870 (0.007)	13.007	0.995 (<0.001)	0.535	0.825 (0.007)	17.548
Applicant/Guidance (70%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	345.66	0.00230	0.997 (<0.001)	0.273	0.931 (0.008)	6.853	0.997 (<0.001)	0.272	0.906 (0.009)	9.364
Guidance (70%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	443.51	0.00295	0.997 (<0.001)	0.349	0.913 (0.008)	8.709	0.997 (<0.001)	0.349	0.882 (0.009)	11.831
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	100.71	0.00067	0.999 (<0.001)	0.080	0.980 (0.009)	2.037	0.999 (<0.001)	0.080	0.972 (0.009)	2.814
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	201.18	0.00134	0.998 (<0.001)	0.159	0.960 (0.008)	0.159	0.998 (<0.001)	0.159	0.944 (0.009)	5.553
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	446.37	0.00297	0.996 (<0.001)	0.352	0.912 (0.008)	8.759	0.996 (<0.001)	0.352	0.881 (0.009)	11.897

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	644.68	0.00428	0.995 (<0.001)	0.507	0.876 (0.008)	12.384	0.995 (<0.001)	0.507	0.833 (0.008)	16.719
Applicant/Guidance (70%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	345.66	0.00800	0.991 (0.001)	0.948	0.781 (0.013)	21.939	0.991 (<0.001)	0.948	0.709 (0.013)	29.060
Guidance (70%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	443.51	0.01027	0.988 (0.001)	1.216	0.727 (0.012)	27.273	0.988 (<0.001)	1.216	0.643 (0.012)	35.672
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	100.71	0.00233	0.997 (<0.001)	0.276	0.930 (0.015)	6.997	0.997 (<0.001)	0.277	0.905 (0.016)	9.550
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	201.18	0.00466	0.994 (0.001)	0.553	0.866 (0.014)	13.400	0.994 (<0.001)	0.533	0.819 (0.015)	18.105
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	446.37	0.01033	0.988 (0.001)	1.224	0.726 (0.012)	27.413	0.988 (<0.001)	1.224	0.642 (0.012)	35.818

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	644.68	0.01492	0.982 (0.001)	1.768	0.629 (0.011)	37.131	0.982 (<0.001)	1.768	0.526 (0.010)	47.391
Applicant/Guidance (70%, 1%)	Harris	Breeding	All consented Projects plus Caledonia	345.66	0.00213	0.997 (<0.001)	0.253	0.936 (0.007)	6.391	0.997 (<0.001)	0.253	0.913 (0.008)	8.724
Guidance (70%, 3%)	Harris	Breeding	All consented Projects plus Caledonia	443.51	0.00274	0.997 (<0.001)	0.325	0.919 (0.007)	8.108	0.997 (<0.001)	0.324	0.890 (0.008)	11.041
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All consented Projects plus Caledonia	100.71	0.00062	0.999 (<0.001)	0.073	0.981 (0.007)	1.889	0.999 (<0.001)	0.074	0.974 (0.008)	2.608
Guidance (70%, 3%)	Harris	Non-breeding	All consented Projects plus Caledonia	201.18	0.00124	0.999 (<0.001)	0.147	0.962 (0.007)	3.754	0.999 (<0.001)	0.147	0.948 (0.008)	5.152
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All consented Projects plus Caledonia	446.37	0.00276	0.997 (<0.001)	0.326	0.919 (0.007)	8.140	0.997 (<0.001)	0.326	0.889 (0.008)	11.104

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Annual Total	All consented Projects plus Caledonia	644.68	0.00398	0.995 (<0.001)	0.471	0.884 (0.007)	11.553	0.995 (<0.001)	0.471	0.844 (0.008)	15.632

Note, this table presents the Guidance Approach a macro-avoidance rate of 70% has been applied to gannet densities during the non-breeding season, whereas during the breeding season the monthly in-flight densities have not been adjusted for macro-avoidance (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).

Table 3-67: PVA results using Seabird PVA Tool for impacts apportioned to the Forth Islands SPA gannet population showing combined distributional responses and collision risk In-combination outputs, with and without Berwick Bank (Applicant Approach to macro-avoidance).

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	SMP	Breeding	All Projects	498.41	0.00331	0.996 (<0.001)	0.393	0.903 (0.008)	9.727	0.996 (<0.001)	0.393	0.868 (0.008)	13.202
Guidance (70%, 3%)	SMP	Breeding	All Projects	670.44	0.00445	0.995 (<0.001)	0.528	0.871 (0.008)	12.872	0.995 (<0.001)	0.528	0.827 (0.008)	17.333
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects	122.70	0.00082	0.999 (<0.001)	0.097	0.975 (0.008)	2.472	0.999 (<0.001)	0.096	0.966 (0.009)	3.427
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	252.11	0.00167	0.998 (<0.001)	0.199	0.950 (0.008)	5.025	0.998 (<0.001)	0.199	0.931 (0.009)	6.905
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All Projects	621.11	0.00413	0.995 (<0.001)	0.489	0.880 (0.008)	11.978	0.995 (<0.001)	0.489	0.838 (0.008)	16.170
Guidance (70%, 3%)	SMP	Annual Total	All Projects	922.55	0.00613	0.993 (<0.001)	0.726	0.828 (0.008)	17.248	0.993 (<0.001)	0.726	0.769 (0.008)	23.062

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Citation	Breeding	All Projects	498.41	0.01154	0.986 (<0.001)	1.367	0.699 (0.006)	30.085	0.986 (<0.001)	1.367	0.609 (0.006)	39.061
Guidance (70%, 3%)	Citation	Breeding	All Projects	670.44	0.01552	0.982 (0.001)	1.838	0.617 (0.011)	38.292	0.982 (<0.001)	1.838	0.513 (0.010)	48.732
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects	122.70	0.00284	0.997 (<0.001)	0.336	0.916 (0.007)	8.375	0.997 (<0.001)	0.336	0.886 (0.008)	11.411
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	252.11	0.00584	0.993 (0.001)	0.691	0.835 (0.014)	16.519	0.993 (<0.001)	0.691	0.779 (0.014)	22.108
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All Projects	621.11	0.01438	0.983 (<0.001)	1.702	0.640 (0.006)	36.019	0.983 (<0.001)	1.702	0.539 (0.006)	46.117
Guidance (70%, 3%)	Citation	Annual Total	All Projects	922.55	0.02136	0.975 (0.001)	2.528	0.514 (0.010)	48.629	0.975 (0.001)	2.529	0.397 (0.009)	60.250
Applicant/ Guidance (70%, 1%)	Harris	Breeding	All Projects	498.41	0.00308	0.996 (<0.001)	0.364	0.910 (0.007)	9.031	0.996 (<0.001)	0.364	0.877 (0.008)	12.309

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Breeding	All Projects	670.44	0.00414	0.995 (<0.001)	0.491	0.885 (0.007)	11.998	0.838 (0.008)	0.490	0.844 (0.007)	16.212
Applicant/ Guidance (70%, 1%)	Harris	Non-breeding	All Projects	122.70	0.00076	0.999 (<0.001)	0.089	0.977 (0.007)	2.288	0.999 (<0.001)	0.089	0.968 (0.008)	3.162
Guidance (70%, 3%)	Harris	Non-breeding	All Projects	252.11	0.00156	0.999 (<0.001)	0.184	0.977 (0.007)	4.691	0.936 (0.008)	0.184	0.968 (0.008)	6.440
Applicant/ Guidance (70%, 1%)	Harris	Annual Total	All Projects	621.11	0.00383	0.995 (<0.001)	0.454	0.889 (0.007)	11.124	0.995 (<0.001)	0.454	0.849 (0.007)	15.096
Guidance (70%, 3%)	Harris	Annual Total	All Projects	922.55	0.00569	0.993 (<0.001)	0.675	0.860 (0.007)	16.154	0.784 (0.007)	0.675	0.811 (0.007)	21.632
Applicant/ Guidance (70%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	374.26	0.00249	0.997 (<0.001)	0.295	0.926 (0.008)	7.406	0.997 (<0.001)	0.295	0.899 (0.009)	10.094
Guidance (70%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	487.49	0.00324	0.996 (<0.001)	0.384	0.905 (0.008)	9.519	0.996 (<0.001)	0.384	0.871 (0.008)	12.916

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00079	0.999 (<0.001)	0.094	0.976 (0.008)	2.409	0.999 (<0.001)	0.094	0.967 (0.009)	3.293
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00161	0.998 (<0.001)	0.191	0.952 (0.008)	4.836	0.998 (<0.001)	0.190	0.934 (0.009)	6.622
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	492.79	0.00327	0.996 (<0.001)	0.389	0.904 (0.008)	9.613	0.996 (<0.001)	0.388	0.870 (0.008)	13.044
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	729.14	0.00484	0.994 (<0.001)	0.574	0.861 (0.008)	13.912	0.994 (<0.001)	0.574	0.813 (0.008)	18.723
Applicant/ Guidance (70%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	374.26	0.00866	0.990 (0.001)	1.026	0.765 (0.013)	23.546	0.990 (<0.001)	1.026	0.690 (0.013)	31.033
Guidance (70%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	487.49	0.01128	0.987 (0.001)	1.337	0.705 (0.012)	29.533	0.987 (<0.001)	1.337	0.616 (0.012)	38.412
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00274	0.997 (<0.001)	0.325	0.918 (0.015)	8.159	0.997 (<0.001)	0.326	0.889 (0.016)	11.102

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00559	0.993 (<0.001)	0.663	0.841 (0.014)	15.940	0.993 (<0.001)	0.663	0.787 (0.014)	21.325
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	492.79	0.01141	0.986 (0.001)	1.350	0.702 (0.012)	29.793	0.986 (<0.001)	1.352	0.613 (0.012)	38.740
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	729.14	0.01688	0.980 (0.001)	1.999	0.591 (0.010)	40.852	0.980 (<0.001)	1.999	0.483 (0.010)	51.660
Applicant/ Guidance (70%, 1%)	Harris	Breeding	All Projects excluding Berwick Bank	374.26	0.00231	0.997 (<0.001)	0.274	0.931 (0.007)	6.890	0.997 (<0.001)	0.274	0.906 (0.008)	9.398
Guidance (70%, 3%)	Harris	Breeding	All Projects excluding Berwick Bank	487.49	0.00301	0.996 (<0.001)	0.357	0.911 (0.007)	8.880	0.996 (<0.001)	0.356	0.879 (0.008)	12.070
Applicant/ Guidance (70%, 1%)	Harris	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00073	0.999 (<0.001)	0.087	0.978 (0.008)	2.227	0.999 (<0.001)	0.087	0.969 (0.009)	3.073
Guidance (70%, 3%)	Harris	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00149	0.998 (<0.001)	0.177	0.955 (0.007)	4.497	0.998 (<0.001)	0.177	0.938 (0.008)	6.166

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Harris	Annual Total	All Projects excluding Berwick Bank	492.79	0.00304	0.996 (<0.001)	0.361	0.910 (0.007)	8.970	0.996 (<0.001)	0.361	0.878 (0.008)	12.190
Guidance (70%, 3%)	Harris	Annual Total	All Projects excluding Berwick Bank	729.14	0.00450	0.995 (<0.001)	0.533	0.870 (0.007)	12.979	0.995 (<0.001)	0.533	0.825 (0.007)	17.516
Applicant/ Guidance (70%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	343.92	0.00229	0.997 (<0.001)	0.271	0.932 (0.008)	6.825	0.997 (<0.001)	0.271	0.907 (0.009)	9.315
Guidance (70%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	441.77	0.00293	0.997 (<0.001)	0.348	0.913 (0.008)	8.679	0.997 (<0.001)	0.348	0.882 (0.009)	11.775
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	100.71	0.00067	0.999 (<0.001)	0.080	0.980 (0.008)	2.048	0.999 (<0.001)	0.080	0.972 (0.009)	2.807
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	201.18	0.00134	0.998 (<0.001)	0.159	0.960 (0.008)	4.030	0.998 (<0.001)	0.159	0.944 (0.009)	5.560
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	444.63	0.00295	0.996 (<0.001)	0.351	0.913 (0.008)	8.719	0.996 (<0.001)	0.350	0.882 (0.009)	11.847

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	642.94	0.00427	0.995 (<0.001)	0.507	0.876 (0.008)	12.363	0.995 (<0.001)	0.506	0.833 (0.008)	16.682
Applicant/ Guidance (70%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	343.92	0.00796	0.991 (0.001)	0.943	0.781 (0.013)	21.871	0.991 (<0.001)	0.944	0.711 (0.013)	28.948
Guidance (70%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	441.77	0.01023	0.988 (0.001)	1.211	0.728 (0.012)	27.182	0.988 (<0.001)	1.211	0.644 (0.012)	35.557
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	100.71	0.00233	0.997 (<0.001)	0.276	0.930 (0.015)	6.959	0.997 (<0.001)	0.277	0.905 (0.016)	9.511
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	201.18	0.00466	0.994 (<0.001)	0.551	0.866 (0.014)	13.398	0.994 (<0.001)	0.552	0.819 (0.015)	18.088
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	444.63	0.01029	0.988 (0.001)	1.219	0.727 (0.012)	27.326	0.988 (<0.001)	1.219	0.643 (0.012)	35.709
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	642.94	0.01488	0.982 (0.001)	1.763	0.629 (0.011)	37.062	0.982 (<0.001)	1.763	0.527 (0.010)	47.315

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Harris	Breeding	All consented Projects plus Caledonia	343.92	0.00212	0.997 (<0.001)	0.252	0.937 (0.007)	6.329	0.997 (<0.001)	2.510	0.914 (0.008)	8.649
Guidance (70%, 3%)	Harris	Breeding	All consented Projects plus Caledonia	441.77	0.00273	0.997 (<0.001)	0.323	0.919 (0.007)	8.076	0.997 (<0.001)	0.323	0.890 (0.008)	11.002
Applicant/ Guidance (70%, 1%)	Harris	Non-breeding	All consented Projects plus Caledonia	100.71	0.00062	0.999 (<0.001)	0.074	0.981 (0.007)	1.901	0.999 (<0.001)	0.074	0.974 (0.008)	2.631
Guidance (70%, 3%)	Harris	Non-breeding	All consented Projects plus Caledonia	201.18	0.00124	0.999 (<0.001)	0.147	0.963 (0.007)	3.744	0.999 (<0.001)	0.147	0.948 (0.008)	5.157
Applicant/ Guidance (70%, 1%)	Harris	Annual Total	All consented Projects plus Caledonia	444.63	0.00274	0.997 (<0.001)	0.325	0.919 (0.007)	8.103	0.997 (<0.001)	0.325	0.889 (0.008)	11.052
Guidance (70%, 3%)	Harris	Annual Total	All consented Projects plus Caledonia	642.94	0.00397	0.995 (<0.001)	0.470	0.885 (0.007)	11.522	0.995 (<0.001)	0.471	0.844 (0.008)	15.610
Note, this table presents the Applicant Approach a macro-avoidance rate of 70% has been applied to all months (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).													

3.25 Hermaness, Saxa Vord and Valla Field SPA: In-combination

3.25.1 Gannet

Table 3-68: PVA results using Seabird PVA Tool for impacts apportioned to the Hermaness, Saxa Vord and Valla Field SPA gannet population showing combined distributional responses and collision risk In-combination outputs, with and without Berwick Bank (Guidance Approach to macro-avoidance).

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects	45.99	0.00123	0.999 (0.001)	0.145	0.963 (0.015)	3.695	0.999 (<0.001)	0.145	0.949 (0.017)	5.087
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	94.27	0.00252	0.997 (0.001)	0.298	0.925 (0.014)	7.483	0.997 (<0.001)	0.153	0. 898 (0.016)	5.337
Applicant/ Guidance (70%, 1%)	SMP	Annual total	All Projects	48.50	0.00129	0.998 (0.001)	0.152	0.961 (0.015)	3.877	0.998 (<0.001)	0.299	0.947 (0.017)	10.183
Guidance (70%, 3%)	SMP	Annual total	All Projects	97.96	0.00261	0.997 (0.001)	0.310	0.923 (0.014)	7.741	0.997 (<0.001)	0.309	0.895 (0.016)	10.535
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects	45.99	0.00140	0.998 (0.001)	0.167	0.958 (0.018)	4.246	0.998 (<0.001)	0.167	0.942 (0.019)	5.823
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	94.27	0.00287	0.997 (0.001)	0.339	0.916 (0.017)	8.438	0.997 (<0.001)	0.339	0.885 (0.018)	11.512

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Citation	Annual total	All Projects	48.50	0.00148	0.998 (0.001)	0.175	0.956 (0.017)	4.410	0.998 (<0.001)	0.176	0.939 (0.019)	6.106
Guidance (70%, 3%)	Citation	Annual total	All Projects	97.96	0.00299	0.996 (0.001)	0.353	0.912 (0.017)	8.797	0.996 (<0.001)	0.353	0.881 (0.018	11.936
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	44.46	0.00119	0.999 (0.001)	0.140	0.964 (0.015)	3.574	0.999 (<0.001)	0.140	0.951 (0.017)	4.901
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	90.42	0.00241	0.997 (0.001)	0.285	0.928 (0.014)	7.187	0.997 (<0.001)	0.286	0.902 (0.016)	9.805
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	46.25	0.00123	0.999 (0.001)	0.146	0.963 (0.015)	3.713	0.999 (<0.001)	0.146	0.949 (0.017)	5.106
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	93.00	0.00248	0.997 (0.001)	0.294	0.926 (0.014)	7.353	0.997 (<0.001)	0.294	0.900 (0.016)	10.043
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	44.46	0.00276	0.998 (0.001)	0.160	0.959 (0.018)	4.052	0.998 (<0.001)	0.160	0.944 (0.019)	5.623
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	90.42	0.00210	0.997 (0.001)	0.328	0.918 (0.017)	8.161	0.997 (<0.001)	0.327	0.888 (0.018)	11.174

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	46.25	0.00141	0.998 (0.001)	0.167	0.958 (0.018)	4.228	0.998 (<0.001)	0.168	0.942 (0.019)	5.835
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	93.00	0.00284	0.997 (0.001)	0.335	0.917 (0.017)	8.328	0.997 (<0.001)	0.335	0.886 (0.018)	11.372
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	39.33	0.00105	0.999 (0.001)	0.125	0.968 (0.015)	3.186	0.999 (<0.001)	0.125	0.956 (0.017)	4.427
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	79.79	0.00213	0.997 (0.001)	0.253	0.936 (0.015)	6.372	0.997 (<0.001)	0.253	0.913 (0.016)	8.719
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	40.21	0.00107	0.999 (0.001)	0.128	0.967 (0.015)	3.285	0.999 (<0.001)	0.129	0.955 (0.016)	4.540
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	81.03	0.00216	0.997 (0.001)	0.255	0.936 (0.014)	6.411	0.997 (<0.001)	0.255	0.912 (0.016)	8.799
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects	39.33	0.00120	0.999 (0.001)	0.142	0.964 (0.017)	3.551	0.999 (<0.001)	0.141	0.951 (0.019)	4.897

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
			plus Caledonia										
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	79.79	0.00243	0.997 (0.001)	0.287	0.928 (0.017)	7.199	0.997 (<0.001)	0.288	0.902 (0.018)	9.826
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	40.21	0.00123	0.999 (0.001)	0.146	0.963 (0.017)	3.712	0.999 (<0.001)	0.146	0.949 (0.019)	5.104
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	81.03	0.00247	0.997 (0.001)	0.292	0.927 (0.017)	7.338	0.997 (<0.001)	0.293	0.900 (0.018)	10.015

Note, this table presents the Guidance Approach a macro-avoidance rate of 70% has been applied to gannet densities during the non-breeding season, whereas during the breeding season the monthly in-flight densities have not been adjusted for macro-avoidance (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).

Table 3-69: PVA results using Seabird PVA Tool for impacts apportioned to the Hermaness, Saxa Vord and Valla Field SPA gannet population showing combined distributional responses and collision risk In-combination outputs, with and without Berwick Bank (Applicant Approach to macro-avoidance).

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects	44.42	0.00119	0.999 (0.001)	0.140	0.964 (0.015)	3.585	0.999 (<0.001)	0.140	0.951 (0.016)	4.931
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	92.69	0.00247	0.997 (0.001)	0.293	0.926 (0.014)	7.373	0.997 (<0.001)	0.293	0.899 (0.016)	10.054
Applicant/ Guidance (70%, 1%)	SMP	Annual total	All Projects	46.47	0.00124	0.999 (0.001)	0.147	0.962 (0.015)	3.773	0.999 (<0.001)	0.148	0.948 (0.016)	5.182
Guidance (70%, 3%)	SMP	Annual total	All Projects	95.93	0.00256	0.997 (0.001)	0.303	0.924 (0.014)	7.588	0.997 (<0.001)	0.304	0.897 (0.015)	10.347
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects	44.42	0.00135	0.998 (0.001)	0.160	0.959 (0.017)	4.078	0.998 (<0.001)	0.161	0.944 (0.019)	5.593
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	92.69	0.00283	0.997 (0.001)	0.334	0.917 (0.016)	8.330	0.997 (<0.001)	0.334	0.886 (0.018)	11.374

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Citation	Annual total	All Projects	46.47	0.00142	0.999 (0.001)	0.119	0.970 (0.017)	3.043	0.999 (<0.001)	0.119	0.958 (0.019)	4.171
Guidance (70%, 3%)	Citation	Annual total	All Projects	95.93	0.00292	0.997 (0.001)	0.346	0.914 (0.016)	8.596	0.997 (<0.001)	0.346	0.883 (0.017)	11.726
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	42.81	0.00114	0.999 (0.001)	0.135	0.966 (0.015)	3.410	0.999 (<0.001)	0.135	0.953 (0.017)	4.736
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	88.77	0.00237	0.997 (0.001)	0.280	0.930 (0.015)	7.032	0.997 (<0.001)	0.281	0.904 (0.016)	9.628
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	44.66	0.00119	0.999 (0.001)	0.140	0.964 (0.015)	3.568	0.999 (<0.001)	0.140	0.951 (0.017)	4.892
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	91.41	0.00244	0.997 (0.001)	0.288	0.928 (0.014)	7.210	0.997 (<0.001)	0.288	0.901 (0.016)	9.852
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	42.81	0.00131	0.998 (0.001)	0.154	0.960 (0.018)	3.956	0.998 (<0.001)	0.155	0.945 (0.019)	5.465

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	88.77	0.00271	0.997 (0.001)	0.322	0.920 (0.017)	8.028	0.997 (<0.001)	0.320	0.891 (0.018)	10.912
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	44.66	0.00136	0.998 (0.001)	0.161	0.959 (0.018)	4.094	0.998 (<0.001)	0.161	0.944 (0.019)	5.635
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	91.41	0.00279	0.997 (0.001)	0.330	0.918 (0.017)	8.231	0.997 (<0.001)	0.331	0.888 (0.018)	11.202
Applicant/ Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.66	0.00098	0.999 (0.001)	0.116	0.970 (0.015)	2.955	0.999 (<0.001)	0.115	0.959 (0.017)	4.052
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	77.12	0.00206	0.998 (0.001)	0.245	0.938 (0.014)	6.166	0.999 (<0.001)	0.244	0.916 (0.016)	8.417
Applicant/ Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	38.11	0.00102	0.999 (0.001)	0.120	0.969 (0.015)	3.060	0.999 (<0.001)	0.120	0.958 (0.017)	4.214
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	78.93	0.00211	0.998 (0.001)	0.249	0.937 (0.014)	6.275	0.998 (<0.001)	0.248	0.914 (0.016)	8.556

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/ Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	36.66	0.00112	0.999 (0.001)	0.131	0.966 (0.018)	3.371	0.999 (<0.001)	0.132	0.953 (0.019)	4.687
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	77.12	0.00235	0.997 (0.001)	0.279	0.930 (0.018)	6.998	0.997 (<0.001)	0.279	0.904 (0.018)	9.558
Applicant/ Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	38.11	0.00116	0.999 (0.001)	0.138	0.965 (0.018)	3.517	0.999 (<0.001)	0.138	0.952 (0.019)	4.833
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	78.93	0.00241	0.997 (0.001)	0.286	0.928 (0.017)	7.208	0.997 (<0.001)	0.286	0.902 (<0.001)	9.762
Note, this table presents the Applicant Approach a macro-avoidance rate of 70% has been applied to all months (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).													

3.26 Buchan Ness SPA: In-combination

3.26.1 Kittiwake

Table 3-70: PVA results using Seabird PVA Tool for impacts apportioned to the Buchan Ness SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	33.31	0.00123	0.999 (0.001)	0.146	0.963 (0.023)	3.706	0.999 (0.001)	0.145	0.948 (0.026)	5.157
Guidance (30%, 3%)	SMP	Breeding	All Projects	43.19	0.00159	0.998 (0.001)	0.188	0.953 (0.020)	4.719	0.998 (0.001)	0.187	0.935 (0.022)	6.493
Guidance (30%, 1%)	SMP	Non-breeding	All Projects	55.20	0.00204	0.998 (0.001)	0.240	0.939 (0.023)	6.081	0.998 (0.001)	0.240	0.917 (0.026)	8.332
Guidance (30%, 3%)	SMP	Non-breeding	All Projects	60.22	0.00222	0.997 (0.001)	0.263	0.934 (0.020)	6.630	0.997 (0.001)	0.263	0.910 (0.022)	9.033
Guidance (30%, 1%)	SMP	Annual Total	All Projects	81.30	0.00300	0.996 (0.001)	0.355	0.912 (0.022)	8.832	0.996 (0.001)	0.356	0.879 (0.024)	12.056
Guidance (30%, 3%)	SMP	Annual Total	All Projects	96.20	0.00355	0.996 (0.001)	0.420	0.896 (0.019)	10.359	0.996 (0.001)	0.420	0.859 (0.021)	14.096

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	28.46	0.00105	0.999 (0.001)	0.125	0.968 (0.023)	3.219	0.999 (0.001)	0.125	0.956 (0.026)	4.443
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	37.04	0.00137	0.998 (0.001)	0.161	0.959 (0.023)	4.117	0.998 (0.001)	0.162	0.943 (0.026)	5.668
Guidance (30%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	47.66	0.00176	0.998 (0.001)	0.208	0.948 (0.023)	5.235	0.998 (0.001)	0.208	0.928 (0.026)	7.207
Guidance (30%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	49.48	0.00183	0.998 (0.001)	0.215	0.946 (0.023)	5.402	0.998 (0.001)	0.215	0.925 (0.026)	7.479
Guidance (30%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	68.92	0.00254	0.997 (0.001)	0.302	0.924 (0.022)	7.569	0.997 (0.001)	0.301	0.897 (0.025)	10.311
Guidance (30%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	79.32	0.00293	0.997 (0.001)	0.346	0.914 (0.022)	8.641	0.997 (0.001)	0.347	0.883 (0.025)	11.713
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	16.16	0.00060	0.999 (0.001)	0.070	0.982 (0.024)	1.792	0.999 (0.001)	0.069	0.976 (0.026)	2.424

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	16.74	0.00062	0.999 (0.001)	0.074	0.982 (0.021)	1.848	0.999 (0.001)	0.072	0.974 (0.023)	2.577
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	30.34	0.00112	0.999 (0.001)	0.132	0.966 (0.023)	3.359	0.999 (0.001)	0.132	0.953 (0.027)	4.676
Guidance (30%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	31.73	0.00117	0.999 (0.001)	0.139	0.964 (0.021)	3.572	0.999 (0.001)	0.139	0.951 (0.023)	4.881
Guidance (30%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	39.29	0.00145	0.998 (0.001)	0.172	0.956 (0.023)	4.388	0.998 (0.001)	0.172	0.940 (0.027)	6.040
Guidance (30%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	41.26	0.00152	0.998 (0.001)	0.180	0.954 (0.021)	4.614	0.998 (0.001)	0.179	0.937 (0.022)	6.301
Guidance (30%, 1%)	Citation	Breeding	All Projects	33.31	0.00055	0.999 (0.001)	0.065	0.983 (0.017)	1.722	0.999 (<0.001)	0.064	0.977 (0.019)	2.314
Guidance (30%, 3%)	Citation	Breeding	All Projects	43.19	0.00071	0.999 (0.001)	0.084	0.978 (0.017)	2.187	0.999 (<0.001)	0.083	0.970 (0.019)	2.987

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Non-breeding	All Projects	55.20	0.00091	0.999 (0.001)	0.106	0.972 (0.017)	2.754	0.999 (<0.001)	0.108	0.962 (0.019)	3.826
Guidance (30%, 3%)	Citation	Non-breeding	All Projects	60.22	0.00099	0.999 (0.001)	0.117	0.970 (0.017)	2.980	0.999 (<0.001)	0.117	0.959 (0.019)	4.115
Guidance (30%, 1%)	Citation	Annual Total	All Projects	88.51	0.00133	0.998 (0.001)	0.160	0.959 (0.017)	4.085	0.998 (<0.001)	0.158	0.944 (0.019)	5.563
Guidance (30%, 3%)	Citation	Annual Total	All Projects	103.41	0.00158	0.998 (0.001)	0.186	0.953 (0.017)	4.734	0.998 (<0.001)	0.186	0.935 (0.019)	6.524
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	28.46	0.00047	0.999 (0.001)	0.056	0.985 (0.018)	1.474	0.999 (<0.001)	0.055	0.980 (0.020)	1.986
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	37.04	0.00061	0.999 (0.001)	0.072	0.981 (0.017)	1.873	0.999 (<0.001)	0.072	0.974 (0.020)	2.603
Guidance (30%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	47.66	0.00078	0.999 (0.001)	0.092	0.976 (0.018)	2.399	0.999 (<0.001)	0.093	0.967 (0.020)	3.304

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	49.48	0.00081	0.999 (0.001)	0.097	0.975 (0.017)	2.495	0.999 (<0.001)	0.096	0.966 (0.019)	3.415
Guidance (30%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	76.12	0.00113	0.999 (0.001)	0.134	0.965 (0.017)	3.487	0.999 (<0.001)	0.134	0.953 (0.019)	4.721
Guidance (30%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	86.53	0.00130	0.998 (0.001)	0.156	0.960 (0.017)	3.964	0.998 (<0.001)	0.155	0.946 (0.019)	5.429
Guidance (30%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	16.16	0.00027	1.000 (0.001)	0.031	0.991 (0.018)	0.864	1.000 (<0.001)	0.031	0.989 (0.020)	1.146
Guidance (30%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	16.74	0.00027	1.000 (0.001)	0.033	0.991 (0.018)	0.884	1.000 (<0.001)	0.032	0.988 (0.020)	1.160
Guidance (30%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	30.34	0.00050	0.999 (0.001)	0.059	0.985 (0.017)	1.544	0.999 (<0.001)	0.058	0.979 (0.019)	2.106
Guidance (30%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	31.73	0.00052	0.999 (0.001)	0.062	0.984 (0.018)	1.627	0.999 (<0.001)	0.061	0.978 (0.020)	2.214

Approach	Data Source	Season	In-combination scenario	Predicted mortality	Mortality Rate Relative to the Population	Density Independent Counterfactual Metric (25 years)				Density Independent Counterfactual Metric (35 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)	Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	46.50	0.00065	0.999 (0.001)	0.078	0.980 (0.018)	2.016	0.999 (<0.001)	0.077	0.972 (0.020)	2.776
Guidance (30%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	48.47	0.00068	0.999 (0.001)	0.081	0.979 (0.017)	2.072	0.999 (<0.001)	0.081	0.971 (0.020)	2.917

4 50 Year PVA output

4.1 East Caithness Cliffs SPA: Project Alone

4.1.1 Guillemot: Caledonia North

Table 4-1: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	50.61	0.00025	1.000 (<0.001)	0.03	0.985 (0.006)	1.45
Guidance (60%, 5%)	SMP	Breeding	84.35	0.00042	1.000 (<0.001)	0.05	0.976 (0.006)	2.39
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	53.04	0.00027	1.000 (<0.001)	0.03	0.985 (0.006)	1.51
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	91.64	0.00046	0.999 (<0.001)	0.05	0.974 (0.006)	2.62
Guidance (60%, 3%)	Citation	Breeding	50.61	0.00047	0.999 (<0.001)	0.054	0.973 (0.008)	2.703

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	84.35	0.00079	0.999 (<0.001)	0.089	0.956 (0.008)	4.440
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	53.04	0.00050	0.999 (<0.001)	0.056	0.972 (0.008)	2.823
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	91.64	0.00086	0.999 (<0.001)	0.097	0.952 (0.007)	4.811

4.1.2 Guillemot: Caledonia South

Table 4-2: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	79.37	0.00025	1.000 (<0.001)	0.045	0.977 (0.006)	2.263
Guidance (60%, 5%)	SMP	Breeding	132.29	0.00042	0.999 (<0.001)	0.074	0.963 (0.006)	3.724
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	89.19	0.00027	0.999 (<0.001)	0.050	0.975 (0.006)	2.531
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	161.75	0.00046	0.999 (<0.001)	0.091	0.955 (0.006)	4.547
Guidance (60%-3%)	Citation	Breeding	79.37	0.00074	0.999 (<0.001)	0.08	0.958 (0.008)	4.16
Guidance (60%-5%)	Citation	Breeding	132.29	0.00123	0.999 (<0.001)	0.14	0.931 (0.007)	6.90
Guidance (60%-3%)	Citation	Non-Breeding	29.46	0.00027	1.000 (<0.001)	0.03	0.984 (0.008)	1.56
Guidance (60%-3%; 60%-1%)	Citation	Annual Total	89.19	0.00084	0.999 (<0.001)	0.09	0.953 (0.008)	4.67

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%-5%; 60%-3%)	Citation	Annual Total	161.75	0.00151	0.998 (<0.001)	0.17	0.917 (0.007)	8.32

4.1.3 Guillemot: Proposed Development (Offshore)

Table 4-3: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	112.80	0.00056	0.999 (<0.001)	0.064	0.968 (0.006)	3.195
Guidance (60%, 5%)	SMP	Breeding	188.00	0.00094	0.999 (<0.001)	0.106	0.948 (0.005)	5.250
Applicant (50%, 1%)	SMP	Annual Total	40.82	0.00020	1.000 (<0.001)	0.023	0.988 (0.006)	1.166
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	124.19	0.00062	0.999 (<0.001)	0.070	0.948 (0.005)	3.506
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	222.16	0.00111	0.999 (<0.001)	0.125	0.938 (0.005)	6.200
Guidance (60%, 3%)	Citation	Breeding	112.80	0.00106	0.999 (<0.001)	0.119	0.941 (0.007)	5.886
Guidance (60%, 5%)	Citation	Breeding	188.00	0.00176	0.998 (<0.001)	0.198	0.904 (0.007)	9.619
Guidance (60%, 3%)	Citation	Non-Breeding	34.16	0.00032	1.000 (<0.001)	0.036	0.982 (0.008)	1.814

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	124.19	0.00116	0.999 (<0.001)	0.131	0.935 (0.007)	6.467
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	222.16	0.00208	0.998 (<0.001)	0.234	0.887 (0.007)	11.264

4.1.4 Razorbill: Caledonia North

Table 4-4: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	9.58	0.00024	1.000 (0.001)	49.18	0.984 (0.058)	50.88
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	10.68	0.00027	1.000 (0.001)	49.32	0.986 (0.057)	50.94
Guidance (60%, 3%)	Citation	Breeding	5.75	0.00036	1.000 (0.001)	0.044	0.978 (0.056)	2.212
Guidance (60%, 5%)	Citation	Breeding	9.58	0.00061	0.999 (0.001)	0.074	0.963 (0.056)	3.680
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.11	0.00039	1.000 (0.001)	0.049	0.976 (0.057)	2.434
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	10.68	0.00068	0.999 (0.001)	0.082	0.959 (0.055)	4.077

4.1.5 Razorbill: Caledonia South

Table 4-5: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from the Caledonia South Project alone showing distributional responses project alone impacts.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	11.86	0.00029	1.000 (0.001)	0.036	0.982 (0.055)	1.807
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	12.47	0.00031	1.000 (0.001)	0.038	0.981 (0.053)	1.910
Guidance (60%, 3%)	Citation	Breeding	7.12	0.00045	0.999 (0.002)	0.056	0.971 (0.094)	2.864
Guidance (60%, 5%)	Citation	Breeding	11.86	0.00075	0.999 (0.002)	0.099	0.952 (0.093)	4.798
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	7.32	0.00046	0.999 (0.002)	0.058	0.971 (0.094)	2.868
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	12.47	0.00079	0.999 (0.002)	0.099	0.951 (0.090)	4.872

4.1.6 Razorbill: Proposed Development (Offshore)

Table 4-6: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.52	0.00029	1.000 (0.001)	0.035	0.983 (0.036)	1.713
Guidance (60%, 5%)	SMP	Breeding	19.19	0.00048	0.999 (0.001)	0.056	0.972 (0.035)	2.781
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	12.00	0.00030	1.000 (0.001)	0.033	0.983 (0.035)	1.679
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	20.66	0.00051	0.999 (0.001)	0.059	0.970 (0.036)	3.026
Guidance (60%, 3%)	Citation	Breeding	11.52	0.00073	0.991 (0.001)	0.861	0.643 (0.039)	35.659
Guidance (60%, 5%)	Citation	Breeding	19.19	0.00121	0.999 (0.001)	0.145	0.928 (0.053)	7.182
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	12.00	0.00076	0.999 (0.001)	0.094	0.952 (0.055)	4.796
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	20.66	0.00131	0.998 (0.001)	0.158	0.922 (0.053)	7.826

4.1.7 Kittiwake: Caledonia South

Table 4-7: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the East Caithness Cliffs SPA from the Caledonia South Project alone.

Approach	Data source	Season	Impact	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	Collision	10.51	0.00021	1.000 (<0.001)	0.026	0.987 (0.020)	1.335
Guidance	SMP	Annual Total	Collision	10.96	0.00022	1.000 (<0.001)	0.026	0.987 (0.020)	1.293
Guidance (30%, 1%)	SMP	Breeding	Dist. and collision	11.74	0.00028	1.000 (<0.001)	0.029	0.985 (0.020)	1.469
Guidance (30%, 3%)	SMP	Breeding	Dist. and collision	13.71	0.00029	1.000 (<0.001)	0.034	0.983 (0.020)	1.699
Guidance (30%, 1%)	SMP	Annual Total	Dist. and collision	12.16	0.00032	1.000 (<0.001)	0.030	0.985 (0.020)	1.544
Guidance (30%, 3%)	SMP	Annual Total	Dist. and collision	14.68	0.00039	1.000 (<0.001)	0.035	0.982 (0.020)	1.826
Guidance (30%, 1%)	Citation	Breeding	Dist. and collision	11.63	0.00024	1.000 (<0.001)	0.025	0.987 (0.018)	1.268

Approach	Data source	Season	Impact	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual Total	Dist. and collision	14.55	0.00029	1.000 (<0.001)	0.026	0.987 (0.018)	1.316

For formatting purposes distributional responses are shortened to Dist.

4.1.8 Kittiwake: Proposed Development (Offshore)

Table 4-8: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the East Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone.

Approach	Data source	Season	Impact	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	Collision	15.65	0.00028	1.000 (<0.001)	0.03	0.983 (0.020)	1.67
Guidance	SMP	Annual Total	Collision	19.01	0.00029	1.000 (<0.001)	0.03	0.983 (0.020)	1.71
Guidance (30%, 1%)	SMP	Annual Total	Dist. and collision	13.70	0.00032	1.000 (<0.001)	0.04	0.981 (0.020)	1.94
Guidance (30%, 3%)	SMP	Annual Total	Dist. and collision	14.30	0.00039	1.000 (<0.001)	0.05	0.976 (0.020)	2.36
Guidance	Citation	Breeding	Collision	15.65	0.00021	1.000 (<0.001)	0.024	0.988 (0.017)	1.216
Guidance	Citation	Annual Total	Collision	19.01	0.00022	1.000 (<0.001)	0.025	0.987 (0.018)	1.309
Guidance (30%, 1%)	Citation	Annual Total	Dist. and collision	13.70	0.00024	1.000 (<0.001)	0.029	0.986 (0.018)	1.418

Approach	Data source	Season	Impact	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual Total	Dist. and collision	14.30	0.00029	1.000 (<0.001)	0.034	0.982 (0.018)	1.752

For formatting purposes distributional responses are shortened to Dist.

4.2 East Caithness Cliffs SPA: In-combination

4.2.1 Guillemot

Table 4-9: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	203.11	0.00102	0.999 (<0.001)	0.114	0.944 (0.005)	5.649
Guidance (60%, 3%; 60%, 1%)	SMP	Breeding	All Projects	731.20	0.00366	0.996 (<0.001)	0.411	0.810 (0.005)	18.953
Guidance (60%, 5%; 60%, 3%)	SMP	Breeding	All Projects	1,218.66	0.00609	0.993 (<0.001)	0.685	0.704 (0.004)	29.577
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	142.13	0.00071	0.999 (<0.001)	0.080	0.960 (0.006)	3.994
Guidance (60%, 3%; 60%, 1%)	SMP	Non-breeding	All Projects	170.55	0.00085	0.999 (<0.001)	0.096	0.952 (0.005)	4.769

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Non-breeding	All Projects	511.66	0.00256	0.997 (<0.001)	0.288	0.863 (0.005)	13.658
Applicant (50%, 1%)	SMP	Annual total	All Projects	345.24	0.00173	0.998 (<0.001)	0.194	0.906 (0.005)	9.444
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects	901.75	0.00451	0.995 (<0.001)	0.507	0.772 (0.005)	22.841
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects	1,730.32	0.00865	0.990 (<0.001)	0.973	0.608 (0.005)	39.249
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	202.67	0.00101	0.999 (<0.001)	0.114	0.943 (0.005)	5.653
Guidance (60%, 3%; 60%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	729.62	0.00365	0.996 (<0.001)	0.410	0.811 (0.005)	18.920
Guidance (60%, 5%; 60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	1,216.03	0.00608	0.993 (<0.001)	0.684	0.705 (0.004)	29.527
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	141.87	0.00071	0.999 (<0.001)	0.080	0.960 (0.005)	3.980

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	170.24	0.00085	0.999 (<0.001)	0.096	0.952 (0.005)	4.761
Guidance (60%, 5%; 60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	510.73	0.00255	0.997 (<0.001)	0.287	0.864 (0.005)	13.640
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	344.54	0.00172	0.998 (<0.001)	0.194	0.906 (0.005)	9.422
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	899.86	0.00450	0.995 (<0.001)	0.506	0.772 (0.004)	22.795
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	1,726.76	0.00863	0.990 (<0.001)	0.970	0.608 (0.004)	39.194
Applicant (50%, 1%)	Citation	Breeding	All Projects	203.11	0.00190	0.998 (<0.001)	0.214	0.897 (0.007)	10.344
Guidance (60%, 3%; 60%, 1%)	Citation	Breeding	All Projects	731.20	0.00685	0.992 (<0.001)	0.771	0.674 (0.005)	32.579
Guidance (60%, 5%; 60%, 3%)	Citation	Breeding	All Projects	1,218.66	0.01142	0.987 (<0.001)	1.284	0.517 (0.004)	48.267

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	142.13	0.00133	0.999 (<0.001)	0.150	0.927 (0.007)	7.339
Guidance (60%, 3%; 60%, 1%)	Citation	Non-breeding	All Projects	170.55	0.00160	0.998 (<0.001)	0.180	0.912 (0.007)	8.773
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All Projects	511.66	0.00480	0.995 (<0.001)	0.539	0.759 (0.006)	24.082
Applicant (50%, 1%)	Citation	Annual Total	All Projects	345.24	0.00324	0.996 (<0.001)	0.364	0.830 (0.007)	16.961
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	901.75	0.00845	0.990 (<0.001)	0.950	0.615 (0.005)	38.548
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	1,730.32	0.01622	0.982 (<0.001)	1.823	0.391 (0.004)	60.875
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	202.67	0.00190	0.998 (<0.001)	0.213	0.897 (0.007)	10.314
Guidance (60%, 3%; 60%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	729.62	0.00684	0.992 (<0.001)	0.769	0.675 (0.005)	32.527

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	1,216.03	0.01140	0.987 (<0.001)	1.281	0.518 (0.004)	48.181
Applicant (50%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	141.87	0.00133	0.999 (<0.001)	0.150	0.927 (0.007)	7.344
Guidance (60%, 3%; 60%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	170.24	0.00160	0.998 (<0.001)	0.180	0.912 (0.007)	8.757
Guidance (60%, 5%; 60%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	510.73	0.00479	0.995 (<0.001)	0.538	0.760 (0.006)	24.048
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	344.54	0.00323	0.996 (<0.001)	0.363	0.831 (0.007)	16.910
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	899.86	0.00843	0.991 (<0.001)	0.948	0.615 (0.005)	38.466
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	1,726.76	0.01618	0.982 (<0.001)	1.819	0.392 (0.003)	60.787

4.2.2 Razorbill

Table 4-10: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	27.29	0.00068	0.999 (0.001)	0.078	0.960 (0.057)	3.988
Guidance (60%, 3%; 60%, 1%)	SMP	Breeding	All Projects	98.25	0.00244	0.997 (0.001)	0.292	0.862 (0.052)	13.836
Guidance (60%, 5%; 60%, 3%)	SMP	Breeding	All Projects	163.75	0.00407	0.995 (0.001)	0.482	0.781 (0.047)	21.871
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	33.16	0.00082	0.999 (0.001)	0.097	0.952 (0.056)	4.842
Guidance (60%, 3%; 60%, 1%)	SMP	Non-breeding	All Projects	39.79	0.00099	0.999 (0.001)	0.119	0.941 (0.054)	5.926
Guidance (60%, 5%; 60%, 3%)	SMP	Non-breeding	All Projects	119.37	0.00297	0.996 (0.001)	0.354	0.834 (0.050)	16.581

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual total	All Projects	60.45	0.00150	0.998 (0.001)	0.179	0.912 (0.054)	8.842
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects	138.04	0.00343	0.996 (0.001)	0.407	0.812 (0.049)	18.794
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects	283.12	0.00703	0.992 (0.001)	0.842	0.650 (0.041)	35.003
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	27.04	0.00067	0.999 (<0.001)	0.081	0.960 (0.018)	4.035
Guidance (60%, 3%; 60%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	97.35	0.00242	0.997 (<0.001)	0.290	0.862 (0.016)	13.782
Guidance (60%, 5%; 60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	162.25	0.00403	0.995 (<0.001)	0.483	0.781 (0.015)	21.897
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	29.47	0.00073	0.999 (<0.001)	0.088	0.956 (0.017)	4.424

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	35.37	0.00088	0.999 (<0.001)	0.105	0.948 (0.017)	5.238
Guidance (60%, 5%; 60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	106.10	0.00264	0.997 (<0.001)	0.316	0.851 (0.016)	14.929
Applicant (50%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	56.51	0.00140	0.998 (<0.001)	0.168	0.918 (0.017)	8.250
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	132.71	0.00330	0.996 (<0.001)	0.395	0.817 (0.016)	18.283
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	268.34	0.00667	0.992 (<0.001)	0.800	0.664 (0.013)	33.604
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	26.87	0.00067	0.999 (<0.001)	0.078	0.961 (0.057)	3.929
Guidance (60%, 3%; 60%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	96.72	0.00240	0.997 (<0.001)	0.286	0.863 (0.052)	13.682

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	161.19	0.00400	0.995 (<0.001)	0.477	0.784 (0.048)	21.648
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	21.25	0.00053	0.999 (<0.001)	0.061	0.969 (0.057)	3.100
Guidance (60%, 3%; 60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	25.50	0.00063	0.999 (<0.001)	0.074	0.962 (0.056)	3.812
Guidance (60%, 5%; 60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	76.49	0.00190	0.998 (<0.001)	0.227	0.891 (0.053)	10.919
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	48.11	0.00120	0.999 (<0.001)	0.142	0.930 (0.056)	7.002
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	122.21	0.00303	0.996 (<0.001)	0.363	0.831 (0.050)	16.922
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	237.68	0.00590	0.993 (<0.001)	0.707	0.696 (0.043)	30.395

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Breeding	All Projects	27.29	0.00068	0.998 (0.002)	0.208	0.899 (0.085)	10.147
Guidance (60%, 3%; 60%, 1%)	Citation	Breeding	All Projects	98.25	0.00244	0.993 (0.002)	0.739	0.684 (0.068)	31.593
Guidance (60%, 5%; 60%, 3%)	Citation	Breeding	All Projects	163.75	0.00407	0.988 (0.002)	1.239	0.529 (0.055)	47.077
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	33.16	0.00082	0.997 (0.002)	0.254	0.879 (0.082)	12.119
Guidance (60%, 3%; 60%, 1%)	Citation	Non-breeding	All Projects	39.79	0.00099	0.997 (0.002)	0.298	0.858 (0.082)	14.214
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All Projects	119.37	0.00297	0.991 (0.002)	0.903	0.630 (0.064)	36.987
Applicant (50%, 1%)	Citation	Annual total	All Projects	60.45	0.00150	0.995 (0.002)	0.453	0.793 (0.077)	20.662
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	138.04	0.00343	0.990 (0.002)	1.042	0.587 (0.060)	41.332

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	283.12	0.00703	0.979 (0.002)	2.146	0.331 (0.040)	66.950
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	27.04	0.00170	0.998 (0.001)	0.199	0.903 (0.052)	9.734
Guidance (60%, 3%; 60%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	97.35	0.00612	0.993 (0.001)	0.715	0.693 (0.043)	30.676
Guidance (60%, 5%; 60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	162.25	0.01020	0.988 (0.001)	1.191	0.543 (0.034)	45.743
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	29.47	0.00134	0.998 (0.001)	0.218	0.895 (0.052)	10.465
Guidance (60%, 3%; 60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	35.37	0.00161	0.997 (0.001)	0.262	0.875 (0.051)	12.534
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	106.10	0.00484	0.992 (0.001)	0.782	0.670 (0.041)	32.967

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	56.51	0.00305	0.996 (0.001)	0.418	0.807 (0.047)	19.251
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	132.71	0.00773	0.990 (0.001)	0.977	0.606 (0.038)	39.379
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	268.34	0.01504	0.980 (0.001)	1.974	0.362 (0.025)	63.830
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	26.87	0.00067	0.998 (0.002)	0.207	0.900 (0.086)	10.010
Guidance (60%, 3%; 60%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	96.72	0.00240	0.993 (0.002)	0.739	0.686 (0.070)	31.446
Guidance (60%, 5%; 60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	161.19	0.00400	0.988(0.002)	1.225	0.533 (0.057)	46.669
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	21.25	0.000528	0.998 (0.002)	0.160	0.921 (0.088)	7.861

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	25.50	0.00063	0.998 (0.002)	0.196	0.905 (0.088)	9.489
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	76.49	0.00190	0.994 (0.002)	0.582	0.742 (0.074)	25.803
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	48.11	0.00120	0.996 (0.002)	0.368	0.830 (0.082)	16.976
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	122.21	0.00304	0.991 (0.002)	0.930	0.621 (0.066)	37.864
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	237.68	0.00590	0.982 (0.002)	1.806	0.394 (0.047)	60.574

4.2.3 Kittiwake

Table 4-11: PVA results using Seabird PVA Tool for impacts apportioned to the East Caithness Cliffs SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	113.71	0.00232	0.997 (<0.001)	0.275	0.869 (0.018)	13.098
Guidance (30%, 3%)	SMP	Breeding	All Projects	185.23	0.00379	0.996 (<0.001)	0.448	0.796 (0.016)	20.432
Guidance (30%, 1%)	SMP	Non-Breeding	All Projects	140.87	0.00288	0.997 (<0.001)	0.341	0.840 (0.018)	15.976
Guidance (30%, 3%)	SMP	Non-Breeding	All Projects	157.08	0.00321	0.996 (<0.001)	0.381	0.823 (0.017)	17.672
Guidance (30%, 1%)	SMP	Annual total	All Projects	254.58	0.00520	0.994 (<0.001)	0.616	0.730 (0.015)	27.01
Guidance (30%, 3%)	SMP	Annual total	All Projects	342.30	0.00700	0.992 (<0.001)	0.827	0.655 (0.014)	34.508
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	113.34	0.00232	0.997 (<0.001)	0.274	0.870 (0.018)	13.034

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	184.75	0.00378	0.996 (<0.001)	0.446	0.796 (0.017)	20.411
Guidance (30%, 1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	119.58	0.00244	0.997 (<0.001)	0.289	0.863 (0.018)	13.671
Guidance (30%, 3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	125.49	0.00257	0.997 (<0.001)	0.303	0.857 (0.018)	14.335
Guidance (30%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	232.92	0.00476	0.994 (<0.001)	0.564	0.750 (0.016)	25.046
Guidance (30%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	310.24	0.00634	0.992 (<0.001)	0.750	0.681 (0.014)	31.863
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	107.26	0.00219	0.997 (<0.001)	0.260	0.876 (0.018)	12.396
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	175.60	0.00359	0.996 (<0.001)	0.425	0.805 (0.017)	19.491

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	97.70	0.00200	0.997 (<0.001)	0.237	0.886 (0.018)	11.392
Guidance (30%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	102.20	0.00209	0.998 (<0.001)	0.247	0.881 (0.018)	11.896
Guidance (30%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	204.96	0.00419	0.997 (<0.001)	0.496	0.776 (0.016)	22.422
Guidance (30%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	277.80	0.00568	0.993 (<0.001)	0.671	0.709 (0.015)	29.091
Guidance (30%, 1%)	Citation	Breeding	All Projects	113.71	0.00175	0.998 (<0.001)	0.206	0.900 (0.016)	10.006
Guidance (30%, 3%)	Citation	Breeding	All Projects	185.23	0.00285	0.997 (<0.001)	0.336	0.842 (0.015)	15.802
Guidance (30%, 1%)	Citation	Non-Breeding	All Projects	140.87	0.00217	0.993 (<0.001)	0.255	0.878 (0.016)	12.249
Guidance (30%, 3%)	Citation	Non-Breeding	All Projects	157.08	0.00242	0.997 (<0.001)	0.286	0.864 (0.016)	13.573

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Annual total	All Projects	254.58	0.00392	0.993 (<0.001)	0.463	0.790 (0.015)	21.055
Guidance (30%, 3%)	Citation	Annual total	All Projects	342.30	0.00527	0.994 (<0.001)	0.623	0.727 (0.013)	27.302
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	113.34	0.00174	0.998 (<0.001)	0.206	0.901 (0.016)	9.920
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	184.75	0.00284	0.997 (<0.001)	0.335	0.843 (0.015)	15.736
Guidance (30%, 1%)	Citation	Non-Breeding	All Projects excluding Berwick Bank	119.58	0.00184	0.998 (<0.001)	0.216	0.895 (0.016)	10.464
Guidance (30%, 3%)	Citation	Non-Breeding	All Projects excluding Berwick Bank	125.49	0.00193	0.998 (<0.001)	0.228	0.890 (0.016)	10.999
Guidance (30%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	232.92	0.00358	0.996 (<0.001)	0.423	0.806 (0.015)	19.436

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	310.24	0.00477	0.994 (<0.001)	0.564	0.750 (0.014)	25.032
Guidance (30%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	107.26	0.00165	0.998 (<0.001)	0.194	0.951 (0.014)	4.925
Guidance (30%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	175.60	0.00270	0.997 (<0.001)	0.319	0.850 (0.015)	15.044
Guidance (30%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	97.70	0.00150	0.998 (<0.001)	0.178	0.750 (0.014)	4.509
Guidance (30%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	102.20	0.00157	0.9968 (<0.001)	0.186	0.910 (0.016)	9.050
Guidance (30%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	204.96	0.00315	0.996 (<0.001)	0.372	0.908 (0.014)	9.185
Guidance (30%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	277.80	0.00427	0.995 (<0.001)	0.506	0.772 (0.014)	22.800

4.3 North Caithness Cliffs SPA: Project alone

4.3.1 Guillemot: Caledonia North

Table 4-12: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	9.40	0.00025	1.000 (<0.001)	0.028	0.990 (0.013)	1.409
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.40	0.00017	1.000 (<0.001)	0.019	0.983 (0.013)	0.997
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	11.68	0.00031	1.000 (<0.001)	0.034	0.986 (0.013)	1.732

4.3.2 Guillemot: Caledonia South

Table 4-13: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	8.84	0.00014	1.000 (<0.001)	0.016	0.992 (0.010)	0.791
Guidance (60%, 5%)	SMP	Breeding	14.74	0.00024	1.000 (<0.001)	0.026	0.987 (0.010)	1.343
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	11.92	0.00019	1.000 (<0.001)	0.021	0.989 (0.010)	1.063
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	23.96	0.00038	1.000 (<0.001)	0.043	0.978 (0.010)	2.167
Guidance (60%, 3%)	Citation	Breeding	8.84	0.00023	1.000 (<0.001)	0.026	0.987 (0.013)	1.335
Guidance (60%, 5%)	Citation	Breeding	14.74	0.00038	1.000 (<0.001)	0.043	0.978 (0.013)	2.224
Guidance (60%, 3%)	Citation	Non breeding	9.22	0.00024	1.000 (<0.001)	0.027	0.986 (0.013)	1.410
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	11.92	0.00031	1.000 (<0.001)	0.036	0.982 (0.013)	1.811

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	23.96	0.00063	0.999 (<0.001)	0.070	0.964 (0.013)	3.560

4.3.3 Guillemot: Proposed Development (Offshore)

Table 4-14: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	12.57	0.00020	1.000 (<0.001)	0.022	0.965 (0.010)	1.119
Guidance (60%, 5%)	SMP	Breeding	20.95	0.00033	1.000 (<0.001)	0.037	0.939 (0.010)	1.894
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	38.87	0.00062	0.999 (<0.001)	0.069	0.989 (0.010)	3.462
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	69.54	0.00111	0.999 (<0.001)	0.124	0.981 (0.010)	6.150
Guidance (60%, 3%)	Citation	Breeding	12.57	0.00033	1.000 (<0.001)	0.037	0.981 (0.013)	1.881
Guidance (60%, 5%)	Citation	Breeding	20.95	0.00055	0.999 (<0.001)	0.062	0.969 (0.013)	3.130
Guidance (60%, 3%)	Citation	Non-Breeding	10.69	0.00028	1.000 (<0.001)	0.031	0.984 (0.013)	1.594
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	38.87	0.00116	0.999 (<0.001)	0.131	0.935 (0.012)	6.501

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	69.54	0.00208	0.998 (<0.001)	0.234	0.887 (0.012)	11.268

4.3.4 Razorbill: Caledonia North

Table 4-15: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	0.88	0.00022	1.000 (0.004)	0.027	0.988 (0.198)	1.205
Guidance (60%, 5%)	Citation	Breeding	1.47	0.00039	1.000 (0.004)	0.036	0.983 (0.197)	1.657
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	0.93	0.00023	1.000 (0.004)	0.026	0.985 (0.192)	1.538
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.62	0.00040	1.000 (0.004)	0.035	0.983 (0.196)	1.672

4.3.5 Razorbill: Caledonia South

Table 4-16: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	1.10	0.00027	1.000 (0.004)	0.034	0.985 (0.200)	1.545
Guidance (60%, 5%)	Citation	Breeding	1.83	0.00046	0.999 (0.004)	0.052	0.973 (0.190)	2.722
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	1.12	0.00028	1.000 (0.004)	0.034	0.981 (0.190)	1.876
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.91	0.00048	0.999 (0.004)	0.060	0.970 (0.190)	2.969

4.3.6 Razorbill: Proposed Development (Offshore)

Table 4-17: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	3.59	0.00044	1.000 (0.001)	0.027	0.986 (0.060)	1.402
Guidance (60%,3%; 60%, 1%)	SMP	Annual Total	5.98	0.00074	1.000 (0.001)	0.013	0.993 (0.061)	0.723
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	6.92	0.00046	1.000 (0.001)	0.028	0.986 (0.061)	1.366
Guidance (60%, 3%)	Citation	Breeding	15.99	0.00044	0.999 (0.002)	0.055	0.979 (0.110)	2.683
Guidance (60%, 5%)	Citation	Breeding	3.59	0.00074	0.999 (0.002)	0.091	0.956 (0.110)	4.449
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	5.98	0.00046	0.999 (0.002)	0.054	0.973 (0.110)	2.683
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	6.92	0.00079	0.999 (0.002)	0.092	0.952 (0.110)	4.759

4.3.7 Puffin: Caledonia North

Table 4-18: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.62	0.02079	0.975 (0.003)	2.465	0.280 (0.039)	72.023
Guidance (60%, 5%)	SMP	Breeding	1.03	0.00035	1.000 (0.002)	0.043	0.979 (0.106)	2.052
Guidance (60%-3%; 60%, 1%)	SMP	Annual total	0.63	0.02079	0.975 (0.003)	2.469	0.280 (0.039)	71.998
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	1.05	0.00035	1.000 (0.002)	0.041	0.979 (0.105)	2.189
Guidance (60%, 5%)	Citation	Breeding	1.03	0.00025	1.000 (0.002)	0.028	0.986 (0.100)	1.439
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	1.05	0.00025	1.000 (0.002)	0.026	0.985 (0.099)	1.451

4.3.8 Puffin: Caledonia South

Table 4-19: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	0.95	0.00032	1.000 (0.002)	0.042	0.980 (0.106)	2.034
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	0.97	0.00032	1.000 (0.002)	0.048	0.976 (0.106)	2.381
Guidance (60%, 5%)	Citation	Breeding	0.95	0.00023	1.000 (0.002)	0.024	0.986 (0.101)	1.445
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	0.97	0.00023	1.000 (0.002)	0.027	0.986 (0.099)	1.377

4.3.9 Puffin: Proposed Development (Offshore)

Table 4-20: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the North Caithness Cliffs SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.98	0.00032	1.000 (0.003)	0.035	0.983 (0.150)	1.721
Guidance (60%, 5%)	SMP	Breeding	1.63	0.00054	0.999 (0.003)	0.065	0.968 (0.145)	3.184
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	0.99	0.00033	1.000 (0.003)	0.046	0.977 (0.149)	2.273
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	1.66	0.00055	0.999 (0.003)	0.065	0.965 (0.145)	3.480
Guidance (60%, 3%)	Citation	Breeding	0.98	0.00023	1.000 (0.003)	0.027	0.994 (0.081)	0.645
Guidance (60%, 5%)	Citation	Breeding	1.63	0.00039	1.000 (0.003)	0.047	0.987 (0.081)	1.297

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	0.99	0.00024	1.000 (0.003)	0.021	0.994 (0.080)	0.599
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.66	0.00040	1.000 (0.003)	0.045	0.988 (0.081)	1.224

4.4 North Caithness Cliffs SPA: In-combination

4.4.1 Guillemot

Table 4-21: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	14.94	0.00023	1.000 (<0.001)	0.027	0.986 (0.010)	1.370
Guidance (60%, 3%)	SMP	Breeding	All Projects	53.77	0.00086	0.999 (<0.001)	0.097	0.951 (0.009)	4.850
Guidance (60%, 5%)	SMP	Breeding	All Projects	89.62	0.00143	0.998 (<0.001)	0.161	0.921 (0.009)	7.913
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	12.25	0.00020	1.000 (<0.001)	0.022	0.988 (0.010)	1.152
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	14.70	0.00023	1.000 (<0.001)	0.027	0.986 (0.010)	1.356
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	44.10	0.00070	0.999 (<0.001)	0.079	0.960 (0.010)	3.951

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual Total	All Projects	27.19	0.00043	1.000 (<0.001)	0.050	0.975 (0.010)	2.507
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	68.47	0.00109	0.999 (<0.001)	0.124	0.939 (0.010)	6.119
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	133.72	0.00213	0.998 (<0.001)	0.240	0.885 (0.009)	11.544
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	14.42	0.000230	1.000 (<0.001)	0.026	0.987 (0.010)	1.337
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	51.90	0.00083	0.999 (<0.001)	0.094	0.953 (0.010)	4.677
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	86.49	0.00138	0.998 (<0.001)	0.155	0.924 (0.009)	7.639
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	11.94	0.00019	1.000 (<0.001)	0.022	0.989 (0.010)	1.098

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	14.33	0.00022	1.000 (<0.001)	0.026	0.987 (0.010)	1.307
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	42.99	0.00069	0.999 (<0.001)	0.078	0.961 (0.010)	3.873
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	26.36	0.00042	1.000 (<0.001)	0.048	0.976 (0.010)	2.384
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	66.23	0.00106	0.999 (<0.001)	0.119	0.941 (0.010)	5.894
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	129.48	0.00207	0.998 (<0.001)	0.233	0.888 (0.009)	11.210
Applicant (50%, 1%)	Citation	Breeding	All Projects	14.94	0.00039	1.000 (<0.001)	0.044	0.978 (0.013)	2.216
Guidance (60%, 3%)	Citation	Breeding	All Projects	53.77	0.00140	0.998 (<0.001)	0.158	0.923 (0.012)	7.737
Guidance (60%, 5%)	Citation	Breeding	All Projects	89.62	0.00234	0.997 (<0.001)	0.263	0.874 (0.012)	12.598

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	12.25	0.00032	1.000 (<0.001)	0.036	0.982 (0.013)	1.845
Guidance (60%, 1%)	Citation	Non-breeding	All Projects	14.70	0.00038	1.000 (<0.001)	0.043	0.978 (0.013)	2.172
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	44.10	0.00115	0.999 (<0.001)	0.130	0.936 (0.013)	6.421
Applicant (50%, 1%)	Citation	Annual total	All Projects	27.19	0.00071	0.999 (<0.001)	0.080	0.960 (0.013)	4.025
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	68.47	0.00179	0.998 (<0.001)	0.201	0.902 (0.012)	9.761
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	133.72	0.00349	0.996 (<0.001)	0.393	0.818 (0.011)	18.190
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	14.42	0.00038	1.000 (<0.001)	0.043	0.978 (0.013)	2.171
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	51.90	0.00135	0.998 (<0.001)	0.153	0.925 (0.012)	7.494

Approach	Data source	Season	In-combination Scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	86.49	0.00226	0.997 (<0.001)	0.254	0.878 (0.012)	12.166
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	11.94	0.00031	1.000 (<0.001)	0.036	0.982 (0.013)	1.781
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	14.33	0.00037	1.000 (<0.001)	0.042	0.979 (0.013)	2.120
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	42.99	0.00112	0.999 (<0.001)	0.126	0.938 (0.012)	6.240
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	26.36	0.00069	0.999 (<0.001)	0.077	0.961 (0.013)	3.889
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	66.23	0.00173	0.998 (<0.001)	0.194	0.905 (0.012)	9.466
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	129.48	0.00338	0.996 (<0.001)	0.380	0.823 (0.011)	17.675

4.4.2 Razorbill

Table 4-22: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	1.96	0.00015	1.000 (0.002)	0.021	0.990 (0.085)	1.027
Guidance (60%, 3%)	SMP	Breeding	All Projects	7.07	0.00053	0.999 (0.002)	0.068	0.966 (0.083)	3.421
Guidance (60%, 5%)	SMP	Breeding	All Projects	11.78	0.00088	0.999 (0.002)	0.112	0.945 (0.081)	5.502
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	4.33	0.00032	1.000 (0.002)	0.041	0.980 (0.084)	1.956
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	5.20	0.00039	0.999 (0.002)	0.050	0.975 (0.084)	2.538
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	15.59	0.00117	0.999 (0.002)	0.142	0.930 (0.084)	6.983
Applicant (50%, 1%)	SMP	Annual total	All Projects	6.30	0.00047	0.999 (0.002)	0.062	0.968 (0.083)	3.154
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects	12.27	0.00092	0.999 (0.002)	0.113	0.944 (0.082)	5.593

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects	27.38	0.00205	0.998 (0.002)	0.249	0.880 (0.077)	12.007
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	1.96	0.00015	1.000 (0.002)	0.021	0.990 (0.085)	1.027
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	7.07	0.00053	0.999 (0.002)	0.068	0.966 (0.083)	3.421
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	11.78	0.00088	0.999 (0.002)	0.112	0.945 (0.081)	5.502
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.85	0.00029	1.000 (0.002)	0.037	0.981 (0.082)	1.940
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.62	0.00035	0.999 (0.002)	0.042	0.979 (0.083)	2.126
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.87	0.00104	0.999 (0.002)	0.127	0.936 (0.080)	6.361

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	5.82	0.00044	0.999 (0.002)	0.055	0.972 (0.083)	2.819
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All Projects excluding Berwick Bank	11.69	0.00087	0.999 (0.002)	0.111	0.944 (0.082)	5.610
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All Projects excluding Berwick Bank	25.66	0.00192	0.998 (0.002)	0.234	0.887 (0.078)	11.293
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	1.86	0.00014	1.000 (0.002)	0.023	0.989 (0.085)	1.075
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	6.71	0.00050	0.999 (0.002)	0.064	0.968 (0.082)	3.233
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	11.19	0.00084	0.999 (0.002)	0.103	0.949 (0.082)	5.076
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.78	0.00021	1.000 (0.002)	0.031	0.984 (0.083)	1.599
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.33	0.00025	0.999 (0.002)	0.032	0.984 (0.084)	1.600

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	9.99	0.00075	0.999 (0.002)	0.095	0.953 (0.083)	4.693
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	4.64	0.00035	0.999 (0.002)	0.042	0.978 (0.084)	2.202
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	10.04	0.00075	0.999 (0.002)	0.095	0.953 (0.081)	4.650
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	21.18	0.00158	0.998 (0.002)	0.195	0.906 (0.080)	9.429
Applicant (50%, 1%)	Citation	Breeding	All Projects	1.96	0.00049	0.999 (0.004)	0.051	0.973 (0.190)	2.654
Guidance (60%, 3%)	Citation	Breeding	All Projects	7.07	0.00177	0.998 (0.004)	0.207	0.897 (0.180)	10.326
Guidance (60%, 5%)	Citation	Breeding	All Projects	11.78	0.00295	0.996 (0.004)	0.352	0.835 (0.170)	16.495
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	4.33	0.00108	0.999 (0.004)	0.127	0.936 (0.190)	6.420
Guidance (60%, 1%)	Citation	Non-breeding	All Projects	5.20	0.00130	0.998 (0.004)	0.159	0.922 (0.180)	7.816
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	15.59	0.00390	0.995 (0.004)	0.461	0.789 (0.160)	21.058

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Annual total	All Projects	6.30	0.00157	0.998 (0.004)	0.187	0.909 (0.180)	9.113
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects	12.27	0.00307	0.996 (0.004)	0.360	0.833 (0.170)	16.708
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects	27.38	0.00684	0.992 (0.004)	0.818	0.658 (0.140)	34.236
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	1.96	0.00049	0.998 (0.002)	0.051	0.973 (0.189)	2.654
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	7.07	0.00177	0.999 (0.004)	0.207	0.897 (0.180)	10.326
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	11.78	0.00295	0.998 (0.004)	0.352	0.835 (0.171)	16.495
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	3.85	0.00096	0.996 (0.004)	0.114	0.943 (0.188)	5.704
Guidance (60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	4.62	0.00116	0.999 (0.004)	0.136	0.933 (0.188)	6.745

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	13.87	0.00347	0.998 (0.004)	0.415	0.811 (0.165)	18.938
Applicant (50%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	5.82	0.00145	0.995 (0.004)	0.172	0.915 (0.184)	8.535
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All Projects excluding Berwick Bank	11.69	0.00292	0.998 (0.004)	0.346	0.836 (0.169)	16.440
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All Projects excluding Berwick Bank	25.66	0.00641	0.996 (0.004)	0.773	0.674 (0.144)	32.633
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	1.86	0.00047	0.999 (0.004)	0.054	0.973 (0.200)	2.706
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	6.71	0.00168	0.998 (0.004)	0.201	0.904 (0.180)	9.632
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	11.19	0.00280	0.997 (0.004)	0.333	0.841 (0.170)	15.885
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.78	0.00069	0.999 (0.004)	0.079	0.957 (0.190)	4.306

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	3.33	0.00083	0.999 (0.004)	0.088	0.955 (0.190)	4.512
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	9.99	0.00250	0.997 (0.004)	0.303	0.859 (0.170)	14.101
Applicant (50%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	4.64	0.00116	0.999 (0.004)	0.131	0.935 (0.190)	6.476
Guidance (60%, 3%; 60%, 1%)	Citation	Annual total	All consented Projects plus Caledonia	10.04	0.00251	0.997 (0.004)	0.290	0.858 (0.170)	14.168
Guidance (60%, 5%; 60%, 3%)	Citation	Annual total	All consented Projects plus Caledonia	21.18	0.00529	0.994 (0.004)	0.627	0.724 (0.150)	27.575

4.4.3 Puffin

Table 4-23: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	18.17	0.00603	0.993 (0.003)	0.711	0.695 (0.098)	30.458
Guidance (60%, 3%)	SMP	Breeding	All Projects	65.40	0.02172	0.974 (0.003)	2.575	0.265 (0.046)	73.534
Guidance (60%, 5%)	SMP	Breeding	All Projects	109.00	0.03620	0.957 (0.005)	4.291	0.107 (0.025)	89.311
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	0.85	0.00028	1.000 (0.002)	0.030	0.985 (0.127)	1.538
Applicant (50%, 1%)	SMP	Annual Total	All Projects	18.40	0.00611	0.993 (0.003)	0.718	0.692 (0.096)	30.831
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	65.68	0.02181	0.974 (0.003)	2.577	0.264 (0.046)	73.552

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	109.85	0.03648	0.957 (0.005)	4.337	0.104 (0.025)	89.557
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	18.13	0.00602	0.993 (0.003)	0.709	0.696 (0.094)	30.435
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	108.80	0.02168	0.974 (0.003)	2.568	0.265 (0.045)	73.473
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	109.00	0.03613	0.957 (0.005)	4.287	0.107 (0.025)	89.296
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	0.65	0.00022	1.000 (0.002)	0.020	0.991 (0.130)	0.876
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	18.31	0.00608	0.993 (0.003)	0.713	0.695 (0.097)	30.480
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	108.80	0.02175	0.974 (0.003)	2.579	0.264 (0.045)	73.627

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	109.45	0.03635	0.957 (0.005)	4.306	0.106 (0.024)	89.393
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	18.10	0.00601	0.993 (0.003)	0.709	0.695 (0.097)	30.452
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	65.16	0.02164	0.974 (0.003)	2.561	0.266 (0.046)	73.395
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	108.60	0.03607	0.957 (0.005)	4.272	0.108 (0.026)	89.189
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	18.10	0.00606	0.993 (0.003)	0.714	0.693 (0.096)	30.652
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	65.35	0.02170	0.974 (0.003)	2.572	0.265 (0.046)	73.525
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	109.17	0.03626	0.957 (0.005)	4.321	0.105 (0.025)	89.475

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Breeding	All Projects	18.17	0.00437	0.995 (0.003)	0.520	0.767 (0.100)	23.311
Guidance (60%, 3%)	Citation	Breeding	All Projects	65.40	0.01572	0.981 (0.003)	1.856	0.383 (0.060)	61.692
Guidance (60%, 5%)	Citation	Breeding	All Projects	109.00	0.02620	0.969 (0.003)	3.105	0.200 (0.037)	79.975
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	0.85	0.00021	1.000 (0.002)	0.020	0.989 (0.130)	1.147
Applicant (50%, 1%)	Citation	Annual Total	All Projects	18.40	0.00442	0.995 (0.002)	0.516	0.765 (0.100)	23.477
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	65.68	0.01579	0.981 (0.003)	1.870	0.382 (0.059)	61.766
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	109.85	0.02641	0.969 (0.004)	3.126	0.198 (0.037)	80.233
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	18.13	0.00436	0.995 (0.003)	0.515	0.768 (0.100)	23.162

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	108.80	0.01569	0.981 (0.003)	1.850	0.385 (0.059)	61.466
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	109.00	0.02615	0.969 (0.003)	3.095	0.201 (0.037)	79.871
Applicant (50%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	0.65	0.00440	0.995 (0.002)	0.516	0.766 (0.130)	23.379
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	18.31	0.01574	0.981 (0.003)	1.862	0.383 (0.059)	61.668
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	108.80	0.02631	0.969 (0.004)	3.119	0.198 (0.037)	80.214
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	109.45	0.00435	0.995 (0.002)	0.511	0.770 (0.100)	22.974
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	18.10	0.01566	0.981 (0.003)	1.852	0.386 (0.059)	61.430

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	65.16	0.02611	0.969 (0.004)	3.090	0.202 (0.037)	79.839
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	108.60	0.00439	0.995 (0.003)	0.521	0.766 (0.100)	23.410
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	18.10	0.01571	0.981 (0.003)	1.850	0.385 (0.058)	61.512
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	65.35	0.02624	0.969 (0.004)	3.109	0.199 (0.037)	80.078

Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).

Table 4-24: PVA results using Seabird PVA Tool for impacts apportioned to the North Caithness Cliffs SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	17.99	0.00597	0.993 (0.003)	0.708	0.697 (0.097)	30.252
Guidance (60%, 3%)	SMP	Breeding	All Projects	64.75	0.02151	0.974 (0.003)	2.551	0.268 90.047)	73.186
Guidance (60%, 5%)	SMP	Breeding	All Projects	107.92	0.03584	0.958 (0.005)	4.242	0.109 (0.026)	89.055
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	0.89	0.00030	1.000 (0.002)	0.037	0.983 (0.128)	1.718
Applicant (50%, 1%)	SMP	Annual Total	All Projects	18.23	0.00606	0.993 (0.003)	0.716	0.693 (0.096)	30.733
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	65.05	0.02605	0.969 (0.004)	3.084	0.202 (0.039)	79.791
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	108.82	0.03614	0.957 (0.005)	4.293	0.107 (0.025)	89.315

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	17.95	0.00596	0.993 (0.003)	0.698	0.699 (0.094)	30.064
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	64.63	0.02147	0.975 (0.003)	2.539	0.270 (0.046)	73.023
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	107.72	0.03578	0.958 (0.004)	4.235	0.110 (0.025)	88.975
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	0.69	0.00023	1.000 (0.002)	0.029	0.986 (0.130)	1.434
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	18.15	0.00603	0.993 (0.0003)	0.714	0.695 (0.095)	30.521
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	64.86	0.02154	0.975 (0.003)	2.546	0.268 (0.047)	73.181
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	108.41	0.03601	0.957 (0.005)	4.265	0.108 (0.025)	89.179

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	17.92	0.00595	0.993 (0.003)	0.702	0.699 (0.095)	30.110
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	64.51	0.02143	0.975 (0.003)	2.530	0.271 (0.046)	72.921
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	10.52	0.03571	0.958 (0.004)	4.233	0.110 (0.025)	88.990
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	0.61	0.00020	1.000 (0.002)	0.018	0.992 (0.130)	0.811
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	18.09	0.00601	0.993 (0.003)	0.707	0.697 (0.094)	30.310
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	64.72	0.02149	0.975 (0.003)	2.536	0.270 (0.046)	73.039
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	108.13	0.03591	0.958 (0.014)	4.246	0.109 (0.025)	89.090

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Breeding	All Projects	17.99	0.00432	0.995 (0.002)	0.506	0.771 (0.101)	0.506
Guidance (60%, 3%)	Citation	Breeding	All Projects	64.75	0.01557	0.982 (0.003)	1.837	0.388 (0.060)	1.837
Guidance (60%, 5%)	Citation	Breeding	All Projects	107.92	0.02594	0.969 (0.003)	3.075	0.203 (0.038)	3.075
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	0.89	0.00021	1.000 (0.002)	0.019	0.991 (0.126)	0.019
Applicant (50%, 1%)	Citation	Annual Total	All Projects	18.23	0.00438	0.995 (0.002)	0.516	0.767 (0.103)	0.516
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	65.05	0.01564	0.982 (0.003)	1.849	0.386 (0.060)	1.849
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	108.82	0.02616	0.969 (0.003)	3.096	0.201 (0.037)	3.096
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	17.95	0.00432	0.995 (0.002)	0.505	0.773 (0.100)	22.729

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	64.63	0.01554	0.982 (0.003)	1.842	0.389 90.058)	61.134
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	107.72	0.02590	0.969 (0.003)	3.055	0 .205 (0.036)	79.478
Applicant (50%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	18.15	0.00436	0.995 (0.002)	0.519	0.769 (0.100)	23.147
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	64.86	0.01559	0.982 (0.003)	1.837	0.388 (0.056)	61.160
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	108.41	0.02606	0.969 (0.003)	3.081	0.203 (0.036)	79.685
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	17.92	0.00431	0.995 (0.002)	0.508	0.770 (0.100)	23.025
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	64.51	0.01551	0.982 (0.003)	1.837	0.388 (0.060)	61.171

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	107.52	0.02585	0.969 (0.004)	3.057	0.206 (0.036)	79.414
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	18.09	0.00435	0.995 (0.003)	0.513	0.769 (0.100)	23.107
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	64.72	0.01556	0.982 (0.003)	1.833	0.388 (0.061)	61.165
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	108.13	0.02599	0.969 (0.003)	3.088	0.202 (0.038)	79.822
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

4.5 Troup, Pennan and Lion's Heads SPA: Project Alone

4.5.1 Guillemot: Caledonia North

Table 4-25: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	11.76	0.00025	1.000 (<0.001)	0.028	0.986 (0.011)	1.428
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	13.50	0.00028	1.000 (<0.001)	0.032	0.984 (0.011)	1.628
Guidance (60%, 5%)	Citation	Breeding	11.76	0.00026	1.000 (<0.001)	0.030	0.985 (0.012)	1.522
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	13.50	0.00030	1.000 (<0.001)	0.034	0.983 (0.012)	1.704

4.5.2 Guillemot: Caledonia South

Table 4-26: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.07	0.00023	1.000 (<0.001)	0.026	0.987 (0.012)	1.313
Guidance (60%, 5%)	SMP	Breeding	18.45	0.00039	1.000 (<0.001)	0.043	0.978 (0.011)	2.213
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	13.41	0.00028	1.000 (<0.001)	0.031	0.984 (0.012)	1.578
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	25.48	0.00053	0.999 (<0.001)	0.060	0.970 (0.011)	2.991
Guidance (60%, 3%)	Citation	Breeding	11.07	0.00025	1.000 (<0.001)	0.028	0.986 (0.012)	1.676
Guidance (60%, 5%)	Citation	Breeding	18.45	0.00041	1.000 (<0.001)	0.047	0.976 (0.012)	3.222

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	13.41	0.00030	1.000 (<0.001)	0.033	0.983 (0.012)	1.399
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	25.48	0.00057	0.999 (<0.001)	0.064	0.968 (0.012)	2.358

4.5.3 Guillemot: Proposed Development (Offshore)

Table 4-27: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	15.73	0.00033	1.000 (<0.001)	0.037	0.981 (0.012)	1.892
Guidance (60%, 5%)	SMP	Breeding	26.22	0.00054	0.999 (<0.001)	0.061	0.969 (0.011)	3.086
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	18.45	0.00039	1.000 (<0.001)	0.043	0.978 (0.011)	2.174
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	34.37	0.00072	0.999 (<0.001)	0.081	0.960 (0.011)	4.038
Guidance (60%, 3%	Citation	Breeding	15.73	0.00035	1.000 (<0.001)	0.040	0.980 (0.012)	2.019
Guidance (60%, 5%)	Citation	Breeding	26.22	0.00059	0.999 (<0.001)	0.066	0.967 (0.012)	3.308

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	18.45	0.00041	1.000 (<0.001)	0.047	0.977 (0.012)	2.342
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	34.37	0.00077	0.999 (<0.001)	0.087	0.957 (0.012)	4.344

4.5.4 Razorbill: Caledonia North

Table 4-28: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from the Caledonia North Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	1.56	0.00033	1.000 (0.003)	0.044	0.977 (0.175)	2.331
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	0.99	0.00033	1.000 (0.003)	0.023	0.985 (0.175)	1.456
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.72	0.00033	1.000 (0.003)	0.047	0.978 (0.178)	2.241

4.5.5 Razorbill: Caledonia South

Table 4-29: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	1.94	0.00022	1.000 (0.002)	0.028	0.986 (0.120)	1.439
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	2.02	0.00022	1.000 (0.002)	0.022	0.988 (0.120)	1.222
Guidance (60%, 3%)	Citation	Breeding	1.16	0.00024	1.000 (0.003)	0.028	0.980 (0.180)	1.979
Guidance (60%, 5%)	Citation	Breeding	1.94	0.00024	1.000 (0.003)	0.044	0.976 (0.180)	2.381
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	1.19	0.00024	1.000 (0.003)	0.016	0.990 (0.170)	0.996
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	2.02	0.00024	1.000 (0.003)	0.039	0.978 (0.180)	2.198

4.5.6 Razorbill: Proposed Development (Offshore)

Table 4-30: PVA results using Seabird PVA Tool for impacts to razorbill apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	3.59	0.00021	1.000 (0.002)	0.027	0.987 (0.104)	1.323
Guidance (60%, 5%)	SMP	Breeding	5.98	0.00021	0.999 (0.002)	0.050	0.975 (0.102)	2.484
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	6.92	0.00021	1.000 (0.002)	0.032	0.985 (0.103)	1.523
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	15.99	0.00021	0.999 (0.002)	0.051	0.975 (0.105)	2.494
Guidance (60%, 3%)	Citation	Breeding	3.59	0.00039	0.999 (0.002)	0.051	0.974 (0.100)	2.575
Guidance (60%, 5%)	Citation	Breeding	5.98	0.00039	0.999 (0.002)	0.082	0.959 (0.100)	4.146

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	6.92	0.00039	0.999 (0.002)	0.052	0.975 (0.100)	2.546
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	15.99	0.00039	0.999 (0.002)	0.079	0.960 (0.100)	3.997

4.5.7 Kittiwake: Caledonia South

Table 4-31: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the Troup, Pennan and Lion's Heads SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Annual Total	6.02	0.00022	1.000 (<0.001)	0.026	0.987 (0.027)	1.274

4.5.8 Kittiwake: Proposed Development (Offshore)

Table 4-32: PVA results using Seabird PVA Tool for impacts to kittiwake apportioned to the Troup, Pennan and Lion's Heads SPA from the Proposed Development (Offshore) Project alone.

Approach	Data source	Season	Impact	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance	SMP	Breeding	Collision	5.55	0.00020	1.000 (<0.001)	0.024	0.988 (0.026)	1.209
Guidance	SMP	Annual Total	Collision	5.83	0.00021	1.000 (<0.001)	0.024	0.988 (0.026)	1.216
Guidance (30%, 1%)	SMP	Annual Total	Dist. and collision	6.56	0.00024	1.000 (<0.001)	0.028	0.986 (0.026)	1.386
Guidance (30%, 3%)	SMP	Annual Total	Dist. and collision	7.66	0.00028	1.000 (<0.001)	0.033	0.983 (0.026)	1.691

For formatting purposes distributional responses are shortened to Dist.

4.6 Troup, Pennan and Lion's Heads SPA: In-combination

4.6.1 Guillemot

Table 4-33: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	14.21	0.00030	1.000 (<0.001)	0.034	0.983 (0.011)	1.708
Guidance (60%, 3%)	SMP	Breeding	All Projects	51.17	0.00107	0.999 (<0.001)	0.121	0.940 (0.011)	5.961
Guidance (60%, 5%)	SMP	Breeding	All Projects	85.29	0.00179	0.998 (<0.001)	0.201	0.903 (0.010)	9.745
Applicant (50%, 1%)	SMP	Non-Breeding	All Projects	24.45	0.00051	0.999 (<0.001)	0.057	0.971 (0.011)	2.877
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects	29.33	0.00061	0.999 (<0.001)	0.069	0.965 (0.011)	3.460
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects	88.00	0.00184	0.998 (<0.001)	0.208	0.899 (0.010)	10.069

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Annual Total	All Projects	38.66	0.00081	0.999 (<0.001)	0.091	0.955 (0.011)	4.542
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	80.51	0.00169	0.998 (<0.001)	0.190	0.907 (0.010)	9.257
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	173.29	0.00363	0.996 (<0.001)	0.409	0.812 (0.009)	18.830
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	9.18	0.00020	1.000 (<0.001)	0.022	0.989 (0.011)	1.105
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	33.05	0.00069	0.999 (<0.001)	0.078	0.961 (0.011)	3.935
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	55.09	0.00115	0.999 (<0.001)	0.130	0.936 (0.011)	6.415
Applicant (50%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	12.40	0.00026	1.000 (<0.001)	0.029	0.985 (0.011)	1.469

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	14.88	0.00031	1.000 (<0.001)	0.035	0.982 (0.011)	1.756
Guidance (60%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	44.65	0.00094	0.999 (<0.001)	0.105	0.948 (0.011)	5.236
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	21.58	0.00045	0.999 (<0.001)	0.051	0.974 (0.011)	2.586
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	47.94	0.00100	0.999 (<0.001)	0.114	0.944 (0.011)	5.640
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	99.74	0.00209	0.998 (<0.001)	0.236	0.887 (0.010)	11.304
Applicant (50%, 1%)	Citation	Breeding	All Projects	14.21	0.00032	1.000 (<0.001)	0.036	0.982 (0.012)	1.791
Guidance (60%, 3%)	Citation	Breeding	All Projects	51.17	0.00115	0.999 (<0.001)	0.129	0.936 (0.011)	6.361
Guidance (60%, 5%)	Citation	Breeding	All Projects	85.29	0.00191	0.998 (<0.001)	0.215	0.896 (0.011)	10.396

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Non-Breeding	All Projects	24.45	0.00055	0.999 (<0.001)	0.061	0.969 (0.012)	3.077
Guidance (60%, 1%)	Citation	Non-Breeding	All Projects	29.33	0.00065	0.999 (<0.001)	0.074	0.963 (0.012)	3.727
Guidance (60%, 3%)	Citation	Non-Breeding	All Projects	88.00	0.00197	0.998 (<0.001)	0.221	0.893 (0.011)	10.724
Applicant (50%, 1%)	Citation	Annual Total	All Projects	38.66	0.00087	0.999 (<0.001)	0.098	0.951 (0.012)	4.870
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	80.51	0.00181	0.998 (<0.001)	0.203	0.902 (0.011)	9.825
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	173.29	0.00389	0.996 (<0.001)	0.437	0.800 (0.010)	20.008
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	9.18	0.00019	1.000 (<0.001)	0.023	0.989 (0.012)	1.134
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	33.05	0.00069	0.999 (<0.001)	0.083	0.958 (0.012)	4.156

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	55.09	0.00115	0.999 (<0.001)	0.139	0.932 (0.011)	6.832
Applicant (50%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	12.40	0.00026	1.000 (<0.001)	0.031	0.984 (0.012)	1.584
Guidance (60%, 3%; 60%, 1%)	Citation	Non-Breeding	All consented Projects plus Caledonia	14.88	0.00031	1.000 (<0.001)	0.038	0.981 (0.012)	1.923
Guidance (60%, 5%; 60%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	44.65	0.00094	0.999 (<0.001)	0.112	0.944 (0.011)	5.584
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	21.58	0.00045	0.999 (<0.001)	0.055	0.973 (0.012)	2.738
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	47.94	0.00100	0.999 (<0.001)	0.120	0.940 (0.011)	5.975
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	99.74	0.00209	0.997 (<0.001)	0.252	0.879 (0.011)	12.050

4.6.2 Razorbill

Table 4-34: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA razorbill population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	1.48	0.00017	1.000 (0.002)	0.023	0.988 (0.110)	1.196
Guidance (60%, 3%)	SMP	Breeding	All Projects	5.34	0.00061	0.999 (0.002)	0.073	0.962 (0.100)	3.844
Guidance (60%, 5%)	SMP	Breeding	All Projects	8.90	0.00101	0.999 (0.002)	0.131	0.937 (0.100)	6.319
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	4.33	0.00049	0.999 (0.002)	0.058	0.971 (0.100)	2.940
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	5.20	0.00059	0.999 (0.002)	0.097	0.953 (0.100)	4.726
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	15.60	0.00177	0.998 (0.002)	0.218	0.896 (0.095)	10.412
Applicant (50%, 1%)	SMP	Annual Total	All Projects	5.82	0.00066	0.999 (0.002)	0.081	0.959 (0.100)	4.134

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	10.54	0.00120	0.999 (0.002)	0.145	0.929 (0.100)	7.102
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	24.50	0.00278	0.997 (0.002)	0.338	0.842 (0.091)	15.783
Applicant (50%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	1.26	0.00014	1.000 (0.002)	0.016	0.991 (0.100)	0.869
Guidance (60%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	4.54	0.00052	0.999 (0.002)	0.062	0.969 (0.100)	3.079
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	7.57	0.00086	0.999 (0.002)	0.108	0.947 (0.100)	5.331
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.86	0.00044	0.999 (0.002)	0.060	0.969 (0.110)	3.051
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.63	0.00053	0.999 (0.002)	0.068	0.966 (0.100)	3.431

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.88	0.00158	0.998 (0.002)	0.195	0.904 (0.098)	9.572
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	5.12	0.00058	0.999 (0.002)	0.070	0.965 (0.100)	3.517
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	9.17	0.00104	0.999 (0.002)	0.126	0.938 (0.100)	6.231
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	21.45	0.00244	0.997 (0.002)	0.294	0.860 (0.095)	13.962
Applicant (50%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	1.00	0.00011	1.000 (0.002)	0.016	0.991 (0.100)	0.866
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	3.59	0.00041	0.999 (0.002)	0.051	0.975 (0.100)	2.498
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	5.98	0.00068	0.999 (0.002)	0.082	0.959 (0.100)	4.143

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.78	0.00032	1.000 (0.002)	0.038	0.980 (0.110)	1.981
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.34	0.00038	0.999 (0.002)	0.066	0.967 (0.100)	3.331
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	10.01	0.00114	0.999 (0.002)	0.133	0.933 (0.100)	6.692
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.78	0.00043	0.999 (0.002)	0.056	0.973 (0.100)	2.726
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	6.92	0.00079	0.999 (0.002)	0.095	0.951 (0.100)	4.899
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	15.99	0.00182	0.998 (0.002)	0.222	0.892 (0.096)	10.798
Applicant (50%, 1%)	Citation	Breeding	All Projects	1.48	0.00031	1.000 (0.003)	0.037	0.982 (0.170)	1.849

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Breeding	All Projects	5.34	0.00111	0.999 (0.003)	0.130	0.935 (0.170)	6.482
Guidance (60%, 5%)	Citation	Breeding	All Projects	8.90	0.00185	0.998 (0.003)	0.227	0.891 (0.160)	10.911
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	4.33	0.00090	0.999 (0.003)	0.107	0.944 (0.170)	5.570
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	5.20	0.00108	0.998 (0.003)	0.155	0.924 (0.160)	7.603
Guidance (60%, 5%)	Citation	Non-breeding	All Projects	15.60	0.00325	0.996 (0.003)	0.394	0.818 (0.150)	18.208
Applicant (50%, 1%)	Citation	Annual Total	All Projects	5.82	0.00121	0.998 (0.003)	0.150	0.924 (0.170)	7.622
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	10.54	0.00220	0.997 (0.003)	0.261	0.873 (0.160)	12.667
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	24.50	0.00510	0.994 (0.004)	0.614	0.731 (0.140)	26.917

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	1.26	0.00026	1.000 (0.003)	0.037	0.981 (0.170)	1.869
Guidance (60%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	4.54	0.00095	0.999 (0.003)	0.109	0.944 (0.170)	5.571
Guidance (60%, 5%)	Citation	Breeding	All Projects excluding Berwick Bank	7.57	0.00158	0.998 (0.003)	0.190	0.908 (0.160)	9.193
Applicant (50%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	3.86	0.00080	0.999 (0.003)	0.105	0.948 (0.170)	5.158
Guidance (60%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	4.63	0.00096	0.999 (0.003)	0.116	0.941 (0.170)	5.858
Guidance (60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	13.88	0.00289	0.996 (0.003)	0.355	0.835 (0.150)	16.530
Applicant (50%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	5.12	0.00107	0.999 (0.003)	0.129	0.938 (0.170)	6.243

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	9.17	0.00191	0.998 (0.003)	0.233	0.890 (0.160)	11.040
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	21.45	0.00447	0.995 (0.004)	0.532	0.762 (0.140)	23.770
Applicant (50%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	1.00	0.00021	1.000 (0.003)	0.031	0.986 (0.170)	1.395
Guidance (60%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	3.59	0.00075	0.999 (0.003)	0.096	0.952 (0.170)	4.792
Guidance (60%, 5%)	Citation	Breeding	All consented Projects plus Caledonia	5.98	0.00125	0.998 (0.003)	0.150	0.928 (0.170)	7.172
Applicant (50%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.78	0.00058	0.999 (0.003)	0.073	0.966 (0.180)	3.448
Guidance (60%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	3.34	0.00069	0.999 (0.003)	0.109	0.946 (0.170)	5.384

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	10.01	0.00208	0.997 (0.003)	0.256	0.877 (0.160)	12.270
Applicant (50%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	3.78	0.00079	0.999 (0.003)	0.096	0.950 (0.170)	5.000
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	6.92	0.00144	0.998 (0.003)	0.177	0.914 (0.160)	8.611
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	15.99	0.00333	0.996 (0.004)	0.402	0.814 (0.150)	18.647

4.6.3 Kittiwake

Table 4-35: PVA results using Seabird PVA Tool for impacts apportioned to the Troup, Pennan and Lion's Heads SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	113.71	0.00085	0.999 (<0.001)	0.100	0.950 (0.025)	4.952
Guidance (30%, 3%)	SMP	Breeding	All Projects	185.23	0.00131	0.998 (<0.001)	0.155	0.924 (0.024)	7.581
Guidance (30%, 1%)	SMP	Non-breeding	All Projects	140.87	0.00230	0.997 (<0.001)	0.272	0.870 (0.024)	12.958
Guidance (30%, 3%)	SMP	Non-breeding	All Projects	157.08	0.00252	0.997 (<0.001)	0.297	0.860 (0.023)	14.025
Guidance (30%, 1%)	SMP	Annual Total	All Projects	254.58	0.00302	0.996 (<0.001)	0.357	0.833 (0.022)	16.670
Guidance (30%, 3%)	SMP	Annual Total	All Projects	342.30	0.00370	0.996 (0.001)	0.437	0.799 (0.022)	20.052
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	113.34	0.00078	0.999 (<0.001)	0.091	0.955 (0.025)	4.491

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	184.75	0.00122	0.999 (<0.001)	0.143	0.929 (0.025)	7.078
Guidance (30%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	119.58	0.00201	0.998 (<0.001)	0.238	0.886 (0.024)	11.439
Guidance (30%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	125.49	0.00209	0.998 (<0.001)	0.246	0.882 (0.024)	11.812
Guidance (30%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	232.92	0.00266	0.997 (0.001)	0.314	0.852 (0.023)	14.830
Guidance (30%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	310.24	0.00318	0.996 (<0.001)	0.375	0.825 (0.022)	17.461
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	16.56	0.00061	0.999 (<0.001)	0.072	0.964 (0.026)	3.567
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	23.30	0.00091	0.999 (<0.001)	0.107	0.947 (0.025)	5.309

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.03	0.00132	0.998 (<0.001)	0.155	0.924 (0.025)	7.640
Guidance (30%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	62.88	0.00138	0.998 (<0.001)	0.164	0.920 (0.025)	7.959
Guidance (30%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	48.98	0.00179	0.998 (<0.001)	0.211	0.898 (0.024)	10.194
Guidance (30%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	82.56	0.00216	0.997 (<0.001)	0.255	0.878 (0.024)	12.212
Guidance (30%, 1%)	Citation	Breeding	All Projects	113.71	0.00037	1.000 (<0.001)	0.044	0.978 (0.018)	2.197
Guidance (30%, 3%)	Citation	Breeding	All Projects	185.23	0.00057	0.999 (<0.001)	0.067	0.966 (0.017)	3.392
Guidance (30%, 1%)	Citation	Non-breeding	All Projects	140.87	0.00099	0.999 (<0.001)	0.118	0.941 (0.017)	5.875
Guidance (30%, 3%)	Citation	Non-breeding	All Projects	157.08	0.00109	0.999 (<0.001)	0.130	0.936 (0.017)	6.389

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	Citation	Annual Total	All Projects	254.58	0.00131	0.998 (<0.001)	0.155	0.924 (0.017)	7.598
Guidance (30%, 3%)	Citation	Annual Total	All Projects	342.30	0.00160	0.998 (<0.001)	0.190	0.908 (0.017)	9.235
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	113.34	0.00034	1.000 (<0.001)	0.041	0.980 (0.018)	2.047
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	184.75	0.00053	0.999 (<0.001)	0.063	0.968 (0.017)	3.170
Guidance (30%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	119.58	0.00087	0.999 (<0.001)	0.104	0.948 (0.017)	5.175
Guidance (30%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	125.49	0.00090	0.999 (<0.001)	0.107	0.947 (0.017)	5.323
Guidance (30%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	232.92	0.00115	0.999 (<0.001)	0.137	0.933 (0.017)	6.721

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	310.24	0.00138	0.998 (<0.001)	0.164	0.920 (0.017)	8.009
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	16.56	0.00026	1.000 (<0.001)	0.032	0.984 (0.018)	1.624
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	23.30	0.00039	0.999 (<0.001)	0.046	0.976 (0.018)	2.385
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.03	0.00057	0.999 (<0.001)	0.068	0.965 (0.018)	3.454
Guidance (30%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	62.88	0.00060	0.999 (<0.001)	0.070	0.965 (0.017)	3.515
Guidance (30%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	48.98	0.00077	0.999 (<0.001)	0.092	0.954 (0.017)	4.611
Guidance (30%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	82.56	0.00093	0.999 (<0.001)	0.110	0.945 (0.017)	5.489

4.7 Copinsay SPA: Project Alone

4.7.1 Guillemot: Caledonia South

Table 4-36.: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Copinsay SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	3.35	0.00031	1.000 (<0.001)	0.035	0.983 (0.023)	1.742

4.7.2 Guillemot: Proposed Development (Offshore)

Table 4-37: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Copinsay SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%)	SMP	Breeding	2.47	0.00022	1.000	0.026	0.977 (0.024)	2.322
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	4.34	0.00040	1.000	0.045	0.987 (0.023)	1.260

4.8 Copinsay SPA: In-combination

4.8.1 Guillemot

Table 4-38: PVA results using Seabird PVA Tool for impacts apportioned to the Copinsay SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	All projects	2.96	0.00027	1.000 (<0.001)	0.032	0.984 (0.018)	1.553
Guidance (60%, 5%)	SMP	Breeding	All projects	4.94	0.00045	0.999 (<0.001)	0.051	0.975 (0.017)	2.511
Guidance (60%, 1%)	SMP	Non-breeding	All projects	2.56	0.00023	1.000 (<0.001)	0.026	0.987 (0.017)	1.324
Guidance (60%, 3%)	SMP	Non-breeding	All projects	7.67	0.00069	0.999 (<0.001)	0.078	0.961 (0.017)	3.881
Applicant (50%, 1%)	SMP	Annual total	All projects	2.95	0.00027	1.000 (<0.001)	0.031	0.985 (0.018)	1.542
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All projects	5.52	0.00050	0.999 (<0.001)	0.057	0.971 (0.017)	2.874
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All projects	12.61	0.00115	0.999 (<0.001)	0.129	0.937 (0.017)	6.339

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	7.60	0.00027	1.000 (<0.001)	0.031	0.984 (0.023)	1.553
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	12.66	0.00045	0.999 (<0.001)	0.051	0.974 (0.023)	2.567
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.85	0.00023	1.000 (<0.001)	0.026	0.987 (0.023)	1.310
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	10.26	0.00070	0.999 (<0.001)	0.079	0.960 (0.023)	3.971
Applicant (50%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	4.96	0.00027	1.000 (<0.001)	0.031	0.984 (0.023)	1.583
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	All consented Projects plus Caledonia	11.02	0.00050	0.999 (<0.001)	0.057	0.971 (0.023)	2.886
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	All consented Projects plus Caledonia	22.92	0.00115	0.999 (<0.001)	0.129	0.936 (0.023)	6.425
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	2.96	0.00026	1.000 (<0.001)	0.029	0.985 (0.015)	1.488

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	4.94	0.00043	1.000 (<0.001)	0.048	0.975 (0.015)	2.465
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.95	0.00026	1.000 (<0.001)	0.030	0.985 (0.015)	1.540
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	5.52	0.00042	1.000 (<0.001)	0.048	0.976 (0.015)	2.442

4.9 Hoy SPA: Project Alone

4.9.1 Guillemot: Caledonia South

Table 4-39: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Hoy SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	4.69	0.00029	1.000 (<0.001)	0.033	0.983 (0.020)	1.713

4.9.2 Guillemot: Proposed Development (Offshore)

Table 4-40: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Hoy SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	6.04	0.00037	1.000 (<0.001)	0.042	0.979 (0.019)	2.130
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	6.04	0.00021	1.000 (<0.001)	0.025	0.987 (0.015)	1.288

4.9.3 Puffin: Caledonia North

Table 4-41: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from the Caledonia North Project alone showing distributional responses project alone ouputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.08	0.00022	1.000 (0.006)	0.033	0.981 (0.385)	1.417
Guidance (60%, 5%)	SMP	Breeding	0.13	0.00037	1.000 (0.006)	0.041	0.969 (0.380)	2.103
Guidance (60%, 5%; 60%, 3%)	SMP	Annual total	0.10	0.00054	1.000 (0.006)	0.040	0.986 (0.380)	1.893
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	0.19	0.00028	0.999 (0.006)	0.065	0.979 (0.380)	3.137

4.9.4 Puffin: Caledonia South

Table 4-42: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.07	0.00021	1.000 (0.006)	0.028	0.984 (0.377)	1.561
Guidance (60%, 5%)	SMP	Breeding	0.12	0.00034	0.999 (0.006)	0.056	0.975 (0.377)	2.492
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	0.10	0.00026	1.000 (0.006)	0.040	0.980 (0.374)	1.996
Guidance (60%, 5%; 60%, 1%)	SMP	Annual Total	0.19	0.00052	0.999 (0.006)	0.065	0.984 (0.371)	2.513

4.9.5 Puffin: Proposed Development (Offshore)

Table 4-43: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Hoy SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	0.13	0.00035	1.000 (0.022)	0.016	0.986 (0.687)	1.429
Guidance (60%, 5%)	SMP	Breeding	0.21	0.00058	0.999 (0.017)	0.069	0.961 (0.655)	3.883
Guidance (60%, 3%)	SMP	Non-Breeding	0.11	0.00030	1.000 (0.030)	0.046	0.976 (0.862)	2.410
Applicant (50%, 1%)	SMP	Annual total	0.08	0.00022	1.000 (0.006)	0.027	0.985 (0.380)	1.476
Guidance (60%, 3%; 60%, 1%)	SMP	Annual total	0.16	0.00045	0.999 (0.022)	0.064	0.976 (0.757)	2.362
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	0.32	0.00089	0.999 (0.009)	0.096	0.957 (0.822)	4.348

4.10 Hoy SPA: In-combination

4.10.1 Guillemot

Table 4-44: PVA results using Seabird PVA Tool for impacts apportioned to the Hoy SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	All Projects	5.19	0.00032	1.000 (<0.001)	0.035	0.982 (0.019)	1.821
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	4.13	0.00025	1.000 (<0.001)	0.029	0.985 (0.019)	1.478
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	8.23	0.00050	0.999 (<0.001)	0.056	0.971 (0.019)	2.873
Guidance (60%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	5.19	0.00032	1.000 (<0.001)	0.035	0.982 (0.019)	1.821
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.13	0.00025	1.000 (<0.001)	0.029	0.985 (0.019)	1.478

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	8.23	0.00050	0.999 (<0.001)	0.056	0.971 (0.019)	2.873
Guidance (60%, 5%)	Citation	Breeding	All Projects	5.19	0.00050	1.000 (<0.001)	0.034	0.983 (0.015)	1.745
Guidance (60%, 5%)	Citation	Annual Total	All consented Projects plus Caledonia	5.19	0.00050	1.000 (<0.001)	0.034	0.983 (0.015)	1.745

4.11 Marwick Head SPA: Project Alone

4.11.1 Guillemot: Caledonia South

Table 4-45: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Marwick Head SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%,5%; 60%, 3%)	Citation	Annual Total	2.85	0.00022	1.000 (<0.001)	0.026	0.987 (0.022)	1.311

4.11.2 Guillemot: Proposed Development (Offshore)

Table 4-46: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Marwick Head SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	3.55	0.00028	1.000 (<0.001)	0.032	0.984(0.022)	1.608

4.12 Marwick Head SPA: In-combination

4.12.1 Guillemot

Table 4-47: PVA results using Seabird PVA Tool for impacts apportioned to the Marwick Head SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	2.64	0.00021	1.000 (<0.001)	0.024	0.987 (0.022)	1.267
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	2.66	0.00021	1.000 (<0.001)	0.025	0.987 (0.022)	1.279
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	5.60	0.00044	0.999 (<0.001)	0.051	0.974 (0.022)	2.556
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	2.96	0.00023	1.000 (<0.001)	0.026	0.986 (0.022)	1.385
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.64	0.00021	1.000 (<0.001)	0.024	0.988 (0.022)	1.215

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	2.66	0.00021	1.000 (<0.001)	0.024	0.988 (0.022)	1.237
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	5.60	0.00044	1.000 (<0.001)	0.050	0.975 (0.022)	2.505

4.13 Calf of Eday SPA: Project Alone

4.13.1 Guillemot: Caledonia South

Table 4-48: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Calf of Eday SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.59	0.00022	1.000 (<0.001)	0.024	0.988 (0.030)	1.234

4.13.2 Guillemot: Proposed Development (Offshore)

Table 4-49: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Calf of Eday SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	1.98	0.00027	1.000 (<0.001)	0.030	0.984 (0.029)	1.553

4.14 West Westray SPA: Project Alone

4.14.1 Guillemot: Caledonia South

Table 4-50: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the West Westray SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	8.26	0.00020	1.000 (<0.001)	0.023	0.988 (0.012)	1.174

4.14.2 Guillemot: Proposed Development (Offshore)

Table 4-51: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the West Westray SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	10.17	0.00025	1.000 (<0.001)	0.027	0.986 (0.012)	1.386
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	10.17	0.00025	1.000 (<0.001)	0.028	0.986 (0.012)	1.445

4.15 West Westray SPA: In-combination

4.15.1 Guillemot

Table 4-52: PVA results using Seabird PVA Tool for impacts apportioned to the West Westray SPA guillemot population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	8.33	0.00030	1.000 (<0.001)	0.024	0.988 (0.012)	1.197
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	12.30	0.00020	1.000 (<0.001)	0.034	0.983 (0.012)	1.714
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	8.33	0.00030	1.000 (<0.001)	0.024	0.988 (0.012)	1.197
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	12.30	0.00020	1.000 (<0.001)	0.034	0.983 (0.012)	1.714
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	8.33	0.00029	1.000 (<0.001)	0.022	0.989 (0.012)	1.135

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	12.30	0.00020	1.000 (<0.001)	0.033	0.984 (0.012)	1.641
Guidance (60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	8.33	0.00029	1.000 (<0.001)	0.022	0.989 (0.012)	1.135
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	12.30	0.00020	1.000 (<0.001)	0.033	0.984 (0.012)	1.641

4.16 Sule Skerry and Sule Stack SPA: Project Alone

4.16.1 Puffin: Proposed Development (Offshore)

Table 4-53: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Sule Skerry and Sule Stack SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	SMP	Breeding	11.02	0.00012	1.000 (<0.001)	0.024	0.988 (0.024)	1.240
Guidance (60%, 5%)	SMP	Breeding	18.37	0.01924	1.000 (<0.001)	0.014	0.993 (0.024)	0.734
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	18.38	0.00019	0.977 (0.001)	2.274	0.309 (0.011)	69.082
Guidance (60%, 3%)	Citation	Breeding	11.02	0.00012	1.000 (<0.001)	0.023	0.988 (0.026)	1.174
Guidance (60%, 5%)	Citation	Breeding	18.37	0.00020	1.000 (<0.001)	0.014	0.993 (0.026)	0.690
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	6.25	0.00020	1.000 (<0.001)	0.024	0.988 (0.026)	1.163

4.17 Sule Skerry and Sule Stack SPA: In-combination

4.17.1 Puffin

Table 4-54: PVA results using Seabird PVA Tool for impacts apportioned to the Sule Skerry and Sule Stack SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	208.77	0.00219	0.997 (<0.001)	0.260	0.876 (0.022)	12.427
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	348.10	0.00365	0.996 (<0.001)	0.431	0.802 (0.021)	19.766
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	208.74	0.00219	0.997 (<0.001)	0.259	0.876 (0.022)	12.426
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	348.02	0.00354	0.996 (<0.001)	0.432	0.802 (0.020)	19.797

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	79.05	0.00083	0.999 (<0.001)	0.099	0.951 (0.024)	4.940
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	131.86	0.00128	0.998 (<0.001)	0.163	0.920 (0.023)	8.015
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	208.77	0.00223	0.997 (<0.001)	0.263	0.874 (0.022)	12.601
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	348.10	0.00371	0.996 (<0.001)	0.440	0.799 (0.021)	20.127
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	208.74	0.00223	0.997 (<0.001)	0.263	0.874 (0.023)	12.578
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	348.02	0.00371	0.996 (<0.001)	0.438	0.799 (0.021)	20.083
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	79.05	0.00084	0.999 (<0.001)	0.101	0.950 (0.024)	5.011

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	131.86	0.00141	0.998 (<0.001)	0.166	0.919 (0.024)	8.134
Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

Table 4-55: PVA results using Seabird PVA Tool for impacts apportioned to the Sule Skerry and Sule Stack SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	201.48	0.00211	0.998 (<0.001)	0.250	0.880 (0.022)	11.982
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	335.97	0.00352	0.996 (<0.001)	0.417	0.808 (0.021)	19.207
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	201.46	0.00211	0.998 (<0.001)	0.249	0.880 (0.022)	11.967
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	335.89	0.00352	0.996 (<0.001)	0.417	0.808 (0.021)	19.187
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	71.77	0.00075	0.999 (<0.001)	0.090	0.955 (0.024)	4.462
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	119.72	0.00125	0.999 (<0.001)	0.149	0.927 (0.023)	7.317

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects	201.48	0.00215	0.997	0.256	0.878 (0.022)	12.216
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	335.97	0.00358	0.996	0.423	0.805 (0.021)	19.469
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	201.46	0.00215	0.997	0.254	0.879 (0.022)	12.137
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	335.89	0.00358	0.996	0.424	0.805 (0.021)	19.502
Guidance (60%, 3%; 60%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	71.77	0.00077	0.999	0.091	0.954 (0.024)	4.564
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	119.72	0.00128	0.998	0.152	0.926 (0.024)	7.443
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non- breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

4.18 Rousay SPA: Project Alone

4.18.1 Guillemot: Caledonia South

Table 4-56: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Rousay SPA from the Caledonia South Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	1.68	0.00021	1.000 (<0.001)	0.023	0.989 (0.29)	1.145

4.18.2 Guillemot: Proposed Development (Offshore)

Table 4-57: PVA results using Seabird PVA Tool for impacts to guillemot apportioned to the Rousay SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60, 3%)	SMP	Annual Total	2.08	0.00026	1.000 (<0.001)	0.029	0.985 (0.028)	1.456
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	2.08	0.00022	1.000 (<0.001)	0.024	0.989 (0.026)	1.141

4.19 Fair Isle SPA: Project Alone

4.19.1 Puffin: Proposed Development (Offshore)

Table 4-58: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Fair Isle SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	1.38	0.00021	1.000 (0.001)	0.025	0.988 (0.078)	1.181

4.19.2 Gannet: Proposed Development (Offshore)

Table 4-59: PVA results using Seabird PVA Tool for impacts to gannet apportioned to the Fair Isle SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs (Guidance Approach to macro-avoidance).

Approach	Data source	Season	Predicted mortality	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Breeding	0.35	0.35	0.00025	1.000 (0.001)	0.037	0.984 (0.085)	1.946
Guidance (70%, 3%)	Citation	Annual Total	0.44	0.44	0.00029	1.000 (0.001)	0.030	0.981 (0.085)	1.553

4.20 Fair Isle SPA: In-combination

4.20.1 Puffin

Table 4-60: PVA results using Seabird PVA Tool for impacts apportioned to the Fair Isle SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Breeding	All Projects	2.60	0.00039	1.000 (0.002)	0.048	0.975 (0.096)	2.487
Guidance (60%, 5%)	SMP	Breeding	All Projects	1.81	0.00027	1.000 (0.002)	0.029	0.984 (0.098)	1.614
Applicant (50%, 3%)	SMP	Non-Breeding	All Projects	2.60	0.00039	1.000 (0.002)	0.044	0.977 (0.096)	2.345
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects	3.12	0.00047	0.999 (0.002)	0.059	0.971 (0.096)	2.928
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects	9.36	0.00140	0.998 (0.002)	0.163	0.920 (0.092)	7.957
Applicant (50%, 1%)	SMP	Annual Total	All Projects	2.90	0.00044	0.999 (0.002)	0.053	0.974 (0.097)	2.586

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	4.21	0.00063	0.999 (0.002)	0.079	0.961 (0.095)	3.923
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	11.17	0.00168	0.998 (0.002)	0.199	0.903 (0.091)	9.722
Guidance (60%, 5%)	SMP	Breeding	All Projects excluding Berwick Bank	1.55	0.00023	1.000 (0.002)	0.028	0.986 (0.098)	1.434
Applicant (50%, 3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	1.74	0.00026	1.000 (0.002)	0.034	0.984 (0.097)	1.632
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	2.08	0.00031	1.000 (0.002)	0.036	0.981 (0.096)	1.917
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	6.25	0.00094	0.999 (0.002)	0.108	0.945 (0.096)	5.545
Applicant (50%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	2.00	0.00030	1.000 (0.002)	0.034	0.983 (0.098)	1.693

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60% 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.02	0.00045	0.999 (0.002)	0.054	0.973 (0.096)	2.697
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	7.80	0.00117	0.999 (0.002)	0.138	0.932 (0.094)	6.809
Guidance (60%, 5%)	SMP	Breeding	All consented Projects plus Caledonia	1.55	0.00023	1.000 (0.002)	0.027	0.985 (0.099)	1.530
Applicant (50%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	1.74	0.00026	1.000 (0.002)	0.027	0.986 (0.098)	1.405
Guidance (60%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	2.08	0.00031	0.999 (0.002)	0.037	0.979 (0.098)	2.051
Guidance (60%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	6.25	0.00094	1.000 (0.002)	0.114	0.944 (0.094)	5.627
Applicant (50%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	2.00	0.00030	1.000 (0.002)	0.032	0.983 (0.096)	1.722

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60% 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.02	0.00045	0.999 (0.002)	0.054	0.972 (0.097)	2.809
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	7.80	0.00117	0.999 (0.002)	0.141	0.931 (0.093)	6.883
Guidance (60%, 3%)	Citation	Non-Breeding	All Projects	9.36	0.00041	0.999 (0.001)	0.050	0.975 (0.052)	2.526
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	11.17	0.00049	0.999 (0.001)	0.057	0.971 (0.051)	2.882
Guidance (60%, 3%)	Citation	Non-Breeding	All consented Projects plus Caledonia	6.25	0.00027	1.000 (0.001)	0.030	0.985 (0.051)	1.480
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	7.80	0.00034	1.000 (0.001)	0.041	0.979 (0.051)	2.099
Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

Table 4-61: PVA results using Seabird PVA Tool for impacts apportioned to the Fair Isle SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	2.72	0.00041	0.999 (0.002)	0.051	0.974 (0.096)	2.564
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects	3.26	0.00049	0.999 (0.002)	0.057	0.971 (0.097)	2.865
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects	9.77	0.00147	0.998 (0.002)	0.172	0.915 (0.092)	8.497
Guidance (50%, 1%	SMP	Annual Total	All Projects	2.90	0.00044	0.999 (0.002)	0.050	0.974 (0.098)	2.621
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	3.93	0.00059	0.999 (0.002)	0.097	0.951 (0.095)	4.873
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	10.89	0.00163	0.998 (0.002)	0.195	0.906 (0.091)	9.423
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	1.85	0.00028	1.000 (0.002)	0.033	0.983 (0.097)	1.689

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)
Guidance (60%, 1%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	2.22	0.00033	1.000 (0.002)	0.036	0.983 (0.097)	1.730
Guidance (60%, 3%)	SMP	Non-Breeding	All Projects excluding Berwick Bank	6.67	0.00100	0.999 (0.002)	0.120	0.942 90.094)	5.802
Guidance (50%, 1%	SMP	Annual Total	All Projects excluding Berwick Bank	2.00	0.00030	1.000 (0.002)	0.027	0.985 (0.096)	1.538
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	2.74	0.00041	1.000 (0.002)	0.048	0.976 (0.097)	2.406
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	7.53	0.00113	0.999 (0.002)	0.130	0.934 (0.093)	6.642
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	1.85	0.00028	1.000 (0.002)	0.033	0.983 90.97)	1.689
Guidance (60%, 1%)	SMP	Non-Breeding	All consented Projects plus Caledonia	2.22	0.00033	1.000 (0.002)	0.036	0.983 (0.097)	1.730

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)
Guidance (60%, 3%)	SMP	Non-Breeding	All consented Projects plus Caledonia	6.67	0.00100	0.999 (0.002)	0.120	0.942 (0.094)	5.802
Guidance (50%, 1%	SMP	Annual Total	All consented Projects plus Caledonia	2.00	0.00030	1.000 (0.002)	0.027	0.985 (0.096)	1.538
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	2.74	0.00041	1.000 (0.002)	0.048	0.976 (0.097)	2.406
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	7.53	0.00113	0.999 (0.002)	0.130	0.934 (0.093)	6.642
Applicant (50%, 1%)	Citation	Non-breeding	All Projects	2.72	0.00042	1.000 (0.001)	0.049	0.975 (0.052)	2.488
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	10.89	0.00047	0.999 (0.001)	0.057	0.972 (0.051)	2.840
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	6.67	0.00029	1.000 (0.001)	0.036	0.982 (0.051)	1.757

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counter (actual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	7.53	0.00033	1.000 (0.001)	0.039	0.980 (0.052)	1.975
Guidance (60%, 5%; 60%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	6.67	0.00029	1.000 (0.001)	0.034	0.983 (0.053)	1.718
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	7.53	0.00033	1.000 (0.001)	0.038	0.981 (0.052)	1.888
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

4.21 Foula SPA: In-combination

4.21.1 Puffin

Table 4-62: PVA results using Seabird PVA Tool for impacts apportioned to the Foula SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	5.46	0.00086	0.999 (0.002)	0.103	0.949 (0.095)	5.101
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	6.56	0.00103	0.999 (0.002)	0.122	0.941 (0.094)	5.919
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	19.67	0.00310	0.996 (0.002)	0.368	0.830 (0.85)	17.044
Applicant (50%, 1%)	SMP	Annual Total	All Projects	5.58	0.00088	0.999 (0.002)	0.106	0.946 (0.094)	5.358
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	6.96	0.00110	0.999 (0.002)	0.131	0.935 (0.094)	6.469

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	20.34	0.00320	0.996 (0.002)	0.378	0.825 (0.085)	17.538
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.65	0.00057	0.999 (0.002)	0.073	0.964 (0.095)	3.577
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.38	0.00069	0.999 (0.002)	0.085	0.957 (0.097)	4.293
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	13.14	0.00207	0.998 (0.002)	0.248	0.881 (0.090)	11.944
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.76	0.00059	0.999 (0.002)	0.074	0.964 (0.094)	3.643
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	4.78	0.00075	0.999 (0.002)	0.082	0.958 (0.097)	4.234
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	13.81	0.00217	0.997 (0.002)	0.263	0.875 (0.090)	12.535

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.65	0.00057	0.999 (0.002)	0.073	0.964 (0.094)	3.577
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	4.38	0.00069	0.999 (0.002)	0.085	0.957 (0.097)	4.293
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	13.14	0.00207	0.998 (0.002)	0.248	0.881 (0.090)	11.944
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.76	0.00059	0.999 (0.002)	0.074	0.964 (0.094)	3.643
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.78	0.00075	0.999 (0.002)	0.082	0.958 (0.097)	4.234
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	13.81	0.00217	0.997 (0.002)	0.263	0.875 (0.090)	12.535
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	19.67	0.00020	1.000 (<0.001)	0.024	0.987 (0.025)	1.265

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	20.34	0.00021	1.000 (<0.001)	0.025	0.987 (0.025)	1.270
Note, this table presents the Guidance Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

Table 4-63: PVA results using Seabird PVA Tool for impacts apportioned to the Foula SPA puffin population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All Projects	5.71	0.00090	0.999 (0.002)	0.105	0.947 (0.096)	5.266
Guidance (60%, 1%)	SMP	Non-breeding	All Projects	6.85	0.00108	0.999 (0.002)	0.127	0.936 (0.096)	6.374
Guidance (60%, 3%)	SMP	Non-breeding	All Projects	20.54	0.00323	0.996 (0.002)	0.383	0.823 (0.088)	17.704
Applicant (50%, 1%)	SMP	Annual Total	All Projects	5.76	0.00091	0.999 (0.002)	0.106	0.946 (0.095)	5.355
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects	7.05	0.00111	0.999 (0.002)	0.125	0.938 (0.095)	6.237
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects	20.88	0.00329	0.996 (0.002)	0.387	0.820 (0.085)	18.016
Guidance (60%, 3%)	Citation	Non-breeding	All Projects	20.54	0.00021	1.000 (<0.001)	0.024	0.987 (0.025)	1.265

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	All Projects	20.88	0.00022	1.000 (<0.001)	0.025	0.987 (0.025)	1.270
Applicant (50%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	3.89	0.00061	0.999 (0.002)	0.074	0.962 (0.096)	3.795
Guidance (60%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	4.67	0.00074	0.999 (0.002)	0.089	0.956 (0.096)	4.415
Guidance (60%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	14.01	0.00221	0.997 (0.002)	0.266	0.873 (0.088)	12.725
Applicant (50%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	3.95	0.00062	0.999 (0.002)	0.077	0.962 (0.096)	3.838
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	4.87	0.00077	0.999 (0.002)	0.090	0.955 (0.095)	4.544
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	14.35	0.00226	0.997 (0.002)	0.269	0.872 (0.089)	12.788

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant (50%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	3.89	0.00061	0.999 (0.002)	0.077	0.962 (0.094)	3.794
Guidance (60%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	4.67	0.00074	0.999 (0.002)	0.085	0.955 (0.094)	4.462
Guidance (60%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	14.01	0.00221	0.997 (0.002)	0.261	0.876 (0.090)	12.426
Applicant (50%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	3.95	0.00062	0.999 (0.002)	0.072	0.965 (0.096)	3.512
Guidance (60%, 3%; 60%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	4.87	0.00077	0.999 (0.002)	0.088	0.955 (0.095)	4.507
Guidance (60%, 5%; 60%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	14.35	0.00226	0.997 (0.002)	0.271	0.870 (0.088)	13.040
Note, this table presents the Applicant Approach for puffin, whereby the Year 1 August abundance has been incorporated as part of the non-breeding season (Further details are provided in Volume 7B, Appendix 6-2: Offshore Ornithology Distributional Responses Technical Report).									

4.22 Forth Islands SPA: Project Alone

4.22.1 Puffin: Proposed Development (Offshore)

Table 4-64: PVA results using Seabird PVA Tool for impacts to puffin apportioned to the Forth Islands SPA from the Proposed Development (Offshore) Project alone showing distributional responses project alone outputs.

Approach	Data source	Season	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
					Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (60%, 3%)	Citation	Non-breeding	6.45	0.00023	1.000 (0.001)	0.029	0.986 (0.047)	1.436
Guidance (60%, 5%; 60%, 3%)	Citation	Annual Total	6.51	0.00023	1.000 (0.001)	0.030	0.985 (0.048)	1.518

4.23 Forth Islands SPA: In-combination

4.23.1 Gannet

Table 4-65: PVA results using Seabird PVA Tool for impacts apportioned to the Forth Islands SPA gannet population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects	86.01	0.00332	0.996 (<0.001)	0.394	0.818 (0.009)	18.229
Guidance (70%, 3%)	SMP	Breeding	All Projects	672.18	0.00447	0.995 (<0.001)	0.529	0.763 (0.009)	23.721
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects	64.71	0.00082	0.999 (<0.001)	0.097	0.952 (0.010)	4.802
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	252.11	0.00167	0.998 (<0.001)	0.198	0.904 (0.010)	9.610
Applicant/Guidance (70%, 1%)	SMP	Annual total	All Projects	150.72	0.00414	0.995 (<0.001)	0.490	0.778 (0.009)	22.176
Guidance (70%, 3%)	SMP	Annual total	All Projects	924.29	0.00614	0.993 (<0.001)	0.727	0.689 (0.008)	31.078

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects	86.01	0.01558	1.000 (<0.001)	0.013	0.993 (0.020)	0.683
Guidance (70%, 3%)	Citation	Breeding	All Projects	672.18	0.01556	0.982 (<0.001)	1.843	0.387 (0.009)	61.292
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects	64.71	0.00284	0.997 (<0.001)	0.337	0.841 (0.017)	15.865
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	252.11	0.00584	0.993 (<0.001)	0.691	0.702 (0.015)	29.807
Applicant/Guidance (70%, 1%)	Citation	Annual total	All Projects	150.72	0.01442	0.983 (<0.001)	1.708	0.415 (0.010)	58.480
Guidance (70%, 3%)	Citation	Annual total	All Projects	924.29	0.02140	0.975 (<0.001)	2.534	0.270 (0.007)	73.000
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects	86.01	0.00309	0.996 (<0.001)	0.366	0.830 (0.008)	17.044
Guidance (70%, 3%)	Harris	Breeding	All Projects	672.18	0.00415	0.995 (<0.001)	0.491	0.778 (0.008)	22.202
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects	64.71	0.00076	0.999 (<0.001)	0.090	0.955 (0.009)	4.491

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Non-breeding	All Projects	252.11	0.00156	0.998 (<0.001)	0.184	0.910 (0.009)	8.974
Applicant/Guidance (70%, 1%)	Harris	Annual total	All Projects	150.72	0.00384	0.995 (<0.001)	0.455	0.792 (0.008)	20.761
Guidance (70%, 3%)	Harris	Annual total	All Projects	924.29	0.00571	0.993 (<0.001)	0.676	0.708 (0.007)	29.228
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	56.61	0.00250	0.997 (<0.001)	0.296	0.860 (0.009)	14.010
Guidance (70%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	489.23	0.00325	0.996 (<0.001)	0.385	0.821 (0.009)	17.860
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	61.56	0.00079	0.999 (<0.001)	0.093	0.954 (0.010)	4.639
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00161	0.998 (<0.001)	0.190	0.907 (0.010)	9.253
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	118.18	0.00329	0.996 (<0.001)	0.390	0.820 (0.009)	18.038

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	730.88	0.00486	0.994 (<0.001)	0.575	0.745 (0.008)	25.479
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	56.61	0.00870	0.990 (<0.001)	1.031	0.589 (0.013)	41.064
Guidance (70%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	489.23	0.01132	0.987 (<0.001)	1.342	0.502 (0.011)	49.811
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	61.56	0.00274	0.997 (<0.001)	0.325	0.847 (0.017)	15.323
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00559	0.993 (<0.001)	0.663	0.712 (0.015)	28.762
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	118.18	0.01145	0.986 (<0.001)	1.355	0.499 (0.011)	50.139
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	730.88	0.01692	0.980 (<0.001)	2.003	0.356 (0.0086)	64.354

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects excluding Berwick Bank	56.61	0.00232	0.997 (<0.001)	0.275	0.869 (0.008)	13.085
Guidance (70%, 3%)	Harris	Breeding	All Projects excluding Berwick Bank	489.23	0.00302	0.996 (<0.001)	0.358	0.833 (0.008)	16.696
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects excluding Berwick Bank	61.56	0.00073	0.999 (<0.001)	0.086	0.957 (0.009)	4.315
Guidance (70%, 3%)	Harris	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00149	0.998 (<0.001)	0.117	0.914 (0.009)	8.620
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All Projects excluding Berwick Bank	118.18	0.00305	0.996 (<0.001)	0.361	0.831 (0.008)	16.865
Guidance (70%, 3%)	Harris	Annual Total	All Projects excluding Berwick Bank	730.88	0.00451	0.995 (<0.001)	0.534	0.761 (0.008)	23.915
Applicant/Guidance (70%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	48.92	0.00230	0.997 (<0.001)	0.272	0.870 (0.009)	12.999

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	44.51	0.00295	0.997 (<0.001)	0.349	0.837 (0.009)	16.324
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	50.23	0.00067	0.999 (<0.001)	0.080	0.960 (0.010)	3.953
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	201.18	0.00134	0.998 (<0.001)	0.159	0.922 (0.010)	7.770
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	99.16	0.00297	0.996 (<0.001)	0.351	0.836 (0.009)	16.415
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	644.68	0.00428	0.995 (<0.001)	0.507	0.772 (0.008)	22.832
Applicant/Guidance (70%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	48.92	0.00800	0.991 (<0.001)	0.948	0.615 (0.013)	38.488
Guidance (70%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	443.51	0.01027	0.988 (<0.001)	1.216	0.536 (0.012)	46.438

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	50.23	0.00233	0.997 (<0.001)	0.276	0.868 (0.017)	13.183
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	201.18	0.00466	0.994 (<0.001)	0.552	0.754 (0.016)	24.611
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	99.16	0.01033	0.988 (<0.001)	1.224	0.534 (0.012)	46.635
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	644.68	0.01492	0.982 (<0.001)	1.768	0.402 (0.009)	59.760
Applicant/Guidance (70%, 1%)	Harris	Breeding	All consented Projects plus Caledonia	48.92	0.00213	0.997 (<0.001)	0.253	0.879 (0.009)	12.118
Guidance (70%, 3%)	Harris	Breeding	All consented Projects plus Caledonia	443.51	0.00274	0.997 (<0.001)	0.324	0.847 (0.008)	15.265
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All consented Projects plus Caledonia	50.23	0.00062	0.999 (<0.001)	0.074	0.963 (0.009)	3.699

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Non-breeding	All consented Projects plus Caledonia	201.18	0.00124	0.999 (<0.001)	0.147	0.928 (0.009)	7.221
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All consented Projects plus Caledonia	99.16	0.00276	0.997 (<0.001)	0.326	0.847 (0.008)	15.334
Guidance (70%, 3%)	Harris	Annual Total	All consented Projects plus Caledonia	644.68	0.00398	0.995 (<0.001)	0.471	0.786 (0.008)	21.403
Note, this table presents the Guidance Approach a macro-avoidance rate of 70% has been applied to gannet densities during the non-breeding season, whereas during the breeding season the monthly in-flight densities have not been adjusted for macro-avoidance (further details are provided in Volume 2, Chapter 6: Offshore Ornithology).									

Table 4-66: PVA results using Seabird PVA Tool for impacts apportioned to the Forth Islands SPA gannet population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects	498.41	0.00331	0.996 (<0.001)	0.393	0.818 (0.009)	18.169
Guidance (70%, 3%)	SMP	Breeding	All Projects	670.44	0.00445	0.995 (<0.001)	0.527	0.764 (0.009)	23.648
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects	122.70	0.00082	0.999 (<0.001)	0.096	0.952 (0.010)	4.795
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	252.11	0.00167	0.998 (<0.001)	0.097	0.952 (0.010)	4.794
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects	621.11	0.00413	0.995 (<0.001)	0.489	0.779 (0.009)	22.110
Guidance (70%, 3%; 70%, 1%)	SMP	Annual Total	All Projects	922.55	0.00613	0.993 (<0.001)	0.726	0.690 (0.008)	31.017
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects	498.41	0.01154	0.986 (<0.001)	1.367	0.496 (0.006)	50.425
Guidance (70%, 3%)	Citation	Breeding	All Projects	670.44	0.01552	0.982 (<0.001)	1.843	0.387 (0.009)	61.292

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects	122.70	0.00284	0.997 (<0.001)	0.336	0.842 (0.009)	15.787
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	252.11	0.00584	0.993 (<0.001)	0.691	0.702 (0.015)	29.807
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects	621.11	0.01438	0.983 (<0.001)	1.702	0.417 (0.005)	58.331
Guidance (70%, 3%)	Citation	Annual Total	All Projects	922.55	0.02136	0.975 (<0.001)	2.534	0.270 (0.007)	73.000
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects	498.41	0.00308	0.996 (<0.001)	0.364	0.830 (0.008)	16.954
Guidance (70%, 3%)	Harris	Breeding	All Projects	670.44	0.00414	0.995 (<0.001)	0.490	0.778 (0.008)	22.157
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects	122.70	0.00076	0.999 (<0.001)	0.090	0.955 (0.009)	4.456
Guidance (70%, 3%)	Harris	Non-breeding	All Projects	252.11	0.00156	0.998 (<0.001)	0.184	0.910 (0.009)	9.001
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All Projects	621.11	0.00383	0.995 (<0.001)	0.454	0.793 (0.008)	20.701

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Annual Total	All Projects	922.55	0.00569	0.993 (<0.001)	0.674	0.708 (0.007)	29.177
Applicant/Guidance (70%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	374.26	0.00249	0.997 (<0.001)	0.295	0.860 (0.009)	13.988
Guidance (70%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	487.49	0.00324	0.996 (<0.001)	0.384	0.822 (0.009)	17.791
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00079	0.999 (<0.001)	0.093	0.953 (0.010)	4.651
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00161	0.998 (<0.001)	0.190	0.908 (0.010)	9.241
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	492.79	0.00327	0.996 (<0.001)	0.388	0.820 (0.009)	17.952
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	729.14	0.00484	0.994 (<0.001)	0.574	0.746 (0.008)	25.425

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	374.26	0.00866	0.990 (<0.001)	1.027	0.591 (0.013)	40.943
Guidance (70%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	487.49	0.01128	0.987 (<0.001)	1.336	0.503 (0.011)	49.658
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00274	0.997 (<0.001)	0.326	0.847 (0.017)	15.341
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00559	0.993 (<0.001)	0.663	0.712 (0.010)	28.782
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	492.79	0.01141	0.986 (<0.001)	1.350	0.500 (0.011)	50.022
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	729.14	0.01688	0.980 (<0.001)	1.988	0.357 (0.009)	64.283
Applicant/Guidance (70%, 1%)	Harris	Breeding	All Projects excluding Berwick Bank	374.26	0.00231	0.997 (<0.001)	0.274	0.870 (0.009)	13.028

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Harris	Breeding	All Projects excluding Berwick Bank	487.49	0.00301	0.996 (<0.001)	0.357	0.833 (0.008)	16.660
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All Projects excluding Berwick Bank	118.53	0.00073	0.999 (<0.001)	0.087	0.957 (0.010)	4.324
Guidance (70%, 3%)	Harris	Non-breeding	All Projects excluding Berwick Bank	241.66	0.00149	0.998 (<0.001)	0.177	0.914 (0.009)	8.634
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All Projects excluding Berwick Bank	492.79	0.00304	0.996 (<0.001)	0.360	0.832 (0.008)	16.816
Guidance (70%, 3%)	Harris	Annual Total	All Projects excluding Berwick Bank	729.14	0.00450	0.995 (<0.001)	0.533	0.761 (0.008)	23.868
Applicant/Guidance (70%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	343.92	0.00229	0.997 (<0.001)	0.271	0.871 (0.009)	12.923
Guidance (70%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	441.77	0.00293	0.997 (<0.001)	0.348	0.837 (0.009)	16.275

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	100.71	0.00067	0.999 (<0.001)	0.079	0.961 (0.010)	3.944
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	201.18	0.00134	0.998 (<0.001)	0.158	0.923 (0.010)	7.748
Applicant (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	444.63	0.00295	0.997 (<0.001)	0.350	0.836 (0.009)	16.374
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	642.94	0.00427	0.995 (<0.001)	0.506	0.772 (0.009)	22.789
Applicant/Guidance (70%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	343.92	0.00796	0.991 (<0.001)	0.943	0.617 (0.013)	38.335
Guidance (70%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	441.77	0.01023	0.988 (<0.001)	1.212	0.537 (0.012)	46.348
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	100.71	0.00233	0.997 (<0.001)	0.277	0.868 (0.018)	13.164

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	201.18	0.00466	0.994 (<0.001)	0.552	0.754 (0.016)	24.612
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	444.63	0.01029	0.988 (<0.001)	1.219	0.535 (0.012)	46.510
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	642.94	0.01488	0.982 (<0.001)	1.764	0.404 (0.009)	59.640
Applicant/Guidance (70%, 1%)	Harris	Breeding	All consented Projects plus Caledonia	343.92	0.00212	0.997 (<0.001)	0.252	0.880 (0.009)	12.045
Guidance (70%, 3%)	Harris	Breeding	All consented Projects plus Caledonia	441.77	0.00273	0.997 (<0.001)	0.323	0.848 (0.009)	15.213
Applicant/Guidance (70%, 1%)	Harris	Non-breeding	All consented Projects plus Caledonia	100.71	0.00062	0.999 (<0.001)	0.074	0.963 (0.009)	3.686
Guidance (70%, 3%)	Harris	Non-breeding	All consented Projects plus Caledonia	201.18	0.00124	0.999 (<0.001)	0.147	0.928 (0.009)	7.236

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Harris	Annual Total	All consented Projects plus Caledonia	444.63	0.00274	0.997 (<0.001)	0.325	0.847 (0.008)	15.301
Guidance (70%, 3%)	Harris	Annual Total	All consented Projects plus Caledonia	642.94	0.00397	0.995 (<0.001)	0.470	0.786 (0.008)	21.364
Note, this table presents the Applicant Approach a macro-avoidance rate of 70% has been applied to all months (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).									

4.24 Hermaness, Saxa Vord and Valla Field SPA: In-combination

4.24.1 Gannet

Table 4-67: PVA results using Seabird PVA Tool for impacts apportioned to the Hermaness, Saxa Vord and Valla Field SPA gannet population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects	45.99	0.00123	0.999 (<0.001)	0.146	0.928 (0.019)	7.163
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	94.27	0.00252	0.997 (<0.001)	0.298	0.859 (0.017)	14.127
Applicant/Guidance (70%, 1%)	SMP	Annual total	All Projects	48.50	0.00129	0.998 (<0.001)	0.153	0.925 (0.019)	7.512
Guidance (70%, 3%)	SMP	Annual total	All Projects	97.96	0.00261	0.997 (<0.001)	0.309	0.854 (0.017)	14.595
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects	45.99	0.00140	0.998 (<0.001)	0.166	0.919 (0.021)	8.139
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	94.27	0.00287	0.997 (<0.001)	0.340	0.841 (0.020)	15.928

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Annual total	All Projects	48.50	0.00148	0.998 (<0.001)	0.175	0.914 (0.021)	8.563
Guidance (70%, 3%)	Citation	Annual total	All Projects	97.96	0.00299	0.996 (<0.001)	0.354	0.835 (0.020)	16.532
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	44.46	0.00119	0.999 (<0.001)	0.141	0.931 (0.019)	6.904
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	90.42	0.00241	0.997 (<0.001)	0.286	0.864 (0.017)	13.578
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	46.25	0.00123	0.999 (<0.001)	0.146	0.928 (0.019)	7.173
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	93.00	0.00248	0.997 (<0.001)	0.294	0.861 (0.018)	13.941
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding	44.46	0.00136	0.998 (<0.001)	0.160	0.922 (0.021)	7.838

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
			Berwick Bank						
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	90.42	0.00276	0.997 (<0.001)	0.327	0.846 (0.020)	15.418
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	46.25	0.00141	0.998 (<0.001)	0.167	0.919 (0.021)	8.149
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	93.00	0.00284	0.997 (<0.001)	0.335	0.843 (0.019)	15.729
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	39.33	0.00105	0.999 (<0.001)	0.125	0.938 (0.019)	6.179
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	79.79	0.00213	0.997 (<0.001)	0.253	0.879 (0.018)	12.111

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	40.21	0.00107	0.999 (<0.001)	0.128	0.937 (0.018)	6.346
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	81.03	0.00216	0.997 (<0.001)	0.255	0.878 (0.018)	12.217
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	39.33	0.00120	0.999 (<0.001)	0.142	0.930 (0.020)	6.960
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	79.79	0.00243	0.997 (<0.001)	0.287	0.863 (0.019)	13.691
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	40.21	0.00123	0.999 (<0.001)	0.146	0.929 (0.020)	7.137
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	81.03	0.00247	0.997 (<0.001)	0.293	0.861 (0.019)	13.909

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Note, this table presents the Guidance Approach a macro-avoidance rate of 70% has been applied to gannet densities during the non-breeding season, whereas during the breeding season the monthly in-flight densities have not been adjusted for macro-avoidance (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).									

Table 4-68: PVA results using Seabird PVA Tool for impacts apportioned to the Hermaness, Saxa Vord and Valla Field SPA gannet population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects	44.42	0.00119	0.999 (<0.001)	0.140	0.931 (0.018)	6.895
Guidance (70%, 3%)	SMP	Non-breeding	All Projects	92.69	0.00247	0.997 (<0.001)	0.293	0.861 (0.017)	13.887
Applicant/Guidance (70%, 1%)	SMP	Annual total	All Projects	46.47	0.00142	0.999 (<0.001)	0.147	0.928 (0.018)	7.237
Guidance (70%, 3%)	SMP	Annual total	All Projects	95.93	0.00256	0.997 (<0.001)	0.303	0.856 (0.017)	14.351
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects	44.42	0.00135	0.998 (<0.001)	0.161	0.921 (0.021)	7.868
Guidance (70%, 3%)	Citation	Non-breeding	All Projects	92.69	0.00283	0.997 (<0.001)	0.335	0.843 (0.019)	15.706
Applicant/Guidance (70%, 1%)	Citation	Annual total	All Projects	46.47	0.00124	0.999 (<0.001)	0.119	0.941 (0.021)	5.867
Guidance (70%, 3%)	Citation	Annual total	All Projects	95.93	0.00292	0.997 (<0.001)	0.346	0.838 (0.018)	16.171

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	42.81	0.00114	0.999 (<0.001)	0.135	0.933 (0.019)	6.658
Guidance (70%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	88.77	0.00237	0.997 (<0.001)	0.281	0.866 (0.019)	13.367
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	44.66	0.00136	0.999 (<0.001)	0.141	0.931 (0.019)	6.923
Guidance (70%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	91.41	0.00279	0.997 (<0.001)	0.289	0.863 (0.018)	13.693
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	42.81	0.00114	0.998 (<0.001)	0.155	0.923 (0.021)	7.673
Guidance (70%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	88.77	0.00237	0.997 (<0.001)	0.321	0.849 (0.020)	15.119

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	44.66	0.00119	0.998 (<0.001)	0.162	0.921 (0.021)	7.915
Guidance (70%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	91.41	0.00244	0.997 (<0.001)	0.331	0.845 (0.021)	15.521
Applicant/Guidance (70%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	36.66	0.00098	0.999 (<0.001)	0.116	0.943 (0.019)	5.747
Guidance (70%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	77.12	0.00206	0.998 (<0.001)	0.244	0.883 (0.018)	11.700
Applicant/Guidance (70%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	38.11	0.00102	0.999 (<0.001)	0.120	0.941 (0.019)	5.933
Guidance (70%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	78.93	0.00211	0.998 (<0.001)	0.249	0.881 (0.018)	11.923

Approach	Data source	Season	In-combination scenario	Predicted Mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Applicant/Guidance (70%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	36.66	0.00112	0.999 (<0.001)	0.142	0.930 (0.020)	6.960
Guidance (70%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	77.12	0.00235	0.997 (<0.001)	0.287	0.863 (0.019)	13.691
Applicant/Guidance (70%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	38.11	0.00116	0.999 (<0.001)	0.146	0.929 (0.020)	7.137
Guidance (70%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	78.93	0.00241	0.997 (<0.001)	0.293	0.861 (0.019)	13.909
Note, this table presents the Applicant Approach a macro-avoidance rate of 70% has been applied to all months (Further details are provided in Volume 2, Chapter 6: Offshore Ornithology).									

4.25 Buchan Ness SPA: In-combination

4.25.1 Kittiwake

Table 4-69: PVA results using Seabird PVA Tool for impacts apportioned to the Buchan Ness SPA kittiwake population showing distributional responses In-combination outputs, with and without Berwick Bank.

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects	4.94	0.00123	0.999 (0.001)	0.146	0.928 (0.030)	7.208
Guidance (30%, 3%)	SMP	Breeding	All Projects	14.82	0.00159	0.998 (<0.001)	0.188	0.909 (0.025)	9.141
Guidance (30%, 1%)	SMP	Non-breeding	All Projects	2.51	0.00204	0.998 (0.001)	0.241	0.884 (0.029)	11.558
Guidance (30%, 3%)	SMP	Non-breeding	All Projects	7.53	0.00222	0.997 (<0.001)	0.262	0.874 (0.023)	12.574
Guidance (30%, 1%)	SMP	Annual Total	All Projects	7.45	0.00300	0.996 (0.001)	0.355	0.834 (0.027)	16.582
Guidance (30%, 3%)	SMP	Annual Total	All Projects	22.35	0.00355	0.996 (<0.001)	0.420	0.807 (0.021)	19.320

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 1%)	SMP	Breeding	All Projects excluding Berwick Bank	4.29	0.00105	0.999 (0.001)	0.126	0.938 (0.030)	6.214
Guidance (30%, 3%)	SMP	Breeding	All Projects excluding Berwick Bank	12.87	0.00137	0.998 (0.001)	0.162	0.921 (0.030)	7.927
Guidance (30%, 1%)	SMP	Non-breeding	All Projects excluding Berwick Bank	0.91	0.00176	0.998 (0.001)	0.208	0.899 (0.029)	10.067
Guidance (30%, 3%)	SMP	Non-breeding	All Projects excluding Berwick Bank	2.73	0.00183	0.998 (0.001)	0.216	0.895 (0.029)	10.452
Guidance (30%, 1%)	SMP	Annual Total	All Projects excluding Berwick Bank	5.20	0.00254	0.997 (0.001)	0.301	0.858 (0.028)	14.237
Guidance (30%, 3%)	SMP	Annual Total	All Projects excluding Berwick Bank	15.60	0.00293	0.997 (0.001)	0.347	0.838 (0.028)	16.250
Guidance (30%, 1%)	SMP	Breeding	All consented Projects plus Caledonia	0.29	0.00060	0.999 (0.001)	0.070	0.965 (0.032)	3.456

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	SMP	Breeding	All consented Projects plus Caledonia	0.86	0.00062	0.999 (<0.001)	0.073	0.963 (0.026)	3.670
Guidance (30%, 1%)	SMP	Non-breeding	All consented Projects plus Caledonia	0.70	0.00112	0.999 (0.001)	0.133	0.935 (0.030)	6.540
Guidance (30%, 3%)	SMP	Non-breeding	All consented Projects plus Caledonia	2.09	0.00117	0.999 (<0.001)	0.139	0.932 (0.025)	6.821
Guidance (30%, 1%)	SMP	Annual Total	All consented Projects plus Caledonia	0.99	0.00145	0.998 (0.001)	0.173	0.915 (0.030)	8.486
Guidance (30%, 3%)	SMP	Annual Total	All consented Projects plus Caledonia	2.96	0.00152	0.998 (<0.001)	0.180	0.912 (0.024)	8.801
Guidance (30%, 1%)	Citation	Breeding	All Projects	4.94	0.00055	0.999 (<0.001)	0.064	0.967 (0.022)	3.270
Guidance (30%, 3%)	Citation	Breeding	All Projects	14.82	0.00071	0.999 (<0.001)	0.085	0.958 (0.022)	4.248
Guidance (30%, 1%)	Citation	Non-breeding	All Projects	2.51	0.00091	0.999 (<0.001)	0.107	0.947 (0.022)	5.332

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Non-breeding	All Projects	7.53	0.00099	0.999 (<0.001)	0.117	0.942 9 (0.021)	5.773
Guidance (30%, 1%)	Citation	Annual Total	All Projects	7.45	0.00133	0.998 (<0.001)	0.158	0.923 (0.021)	7.720
Guidance (30%, 3%)	Citation	Annual Total	All Projects	22.35	0.00158	0.998 (<0.001)	0.187	0.909 (0.021)	9.098
Guidance (30%, 1%)	Citation	Breeding	All Projects excluding Berwick Bank	4.29	0.00047	0.999 (<0.001)	0.056	0.972 (0.023)	2.832
Guidance (30%, 3%)	Citation	Breeding	All Projects excluding Berwick Bank	12.87	0.00061	0.999 (<0.001)	0.072	0.964 (0.022)	3.606
Guidance (30%, 1%)	Citation	Non-breeding	All Projects excluding Berwick Bank	0.91	0.00078	0.999 (<0.001)	0.093	0.954 (0.022)	4.608
Guidance (30%, 3%)	Citation	Non-breeding	All Projects excluding Berwick Bank	2.73	0.00081	0.999 (<0.001)	0.097	0.952 (0.022)	4.806
Guidance (30%, 1%)	Citation	Annual Total	All Projects excluding Berwick Bank	5.20	0.00113	0.999 (<0.001)	0.134	0.934 (0.021)	6.630

Approach	Data source	Season	In-combination scenario	Predicted mortality	Mortality rate relative to the population	Density independent counterfactual metric (50 years)			
						Median Growth rate (±SD)	Decrease in CGR (%)	Median Pop. Size (±SD)	Decrease in CPS (%)
Guidance (30%, 3%)	Citation	Annual Total	All Projects excluding Berwick Bank	15.60	0.00130	0.998 (<0.001)	0.154	0.924 (0.021)	7.593
Guidance (30%, 1%)	Citation	Breeding	All consented Projects plus Caledonia	0.29	0.00027	1.000 (<0.001)	0.032	0.984 (0.023)	1.640
Guidance (30%, 3%)	Citation	Breeding	All consented Projects plus Caledonia	0.86	0.00027	1.000 (<0.001)	0.032	0.983 (0.023)	1.660
Guidance (30%, 1%)	Citation	Non-breeding	All consented Projects plus Caledonia	0.70	0.00050	0.999 (<0.001)	0.059	0.970 (0.022)	2.971
Guidance (30%, 3%)	Citation	Non-breeding	All consented Projects plus Caledonia	2.09	0.00052	0.999 (<0.001)	0.062	0.969 (0.022)	3.116
Guidance (30%, 1%)	Citation	Annual Total	All consented Projects plus Caledonia	0.99	0.00065	0.999 (<0.001)	0.077	0.961 (0.023)	3.937
Guidance (30%, 3%)	Citation	Annual Total	All consented Projects plus Caledonia	2.96	0.00068	0.999 (<0.001)	0.080	0.960 (0.022)	4.037

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