Salamander Offshore Wind Farm

Offshore Report to Inform Appropriate Assessment

Volume RP.A.2, Annex 1: Apportioning Report

SALAMANDER

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Glossary

Term	Definition
Apparently Occupied Nest (AON)	An active nest occupied by a bird, pair of birds, or with eggs or chicks present.
Apparently Occupied Burrow (AOB)	An apparently active and occupied burrow which may have a nest.
Apportioning	A method that assigns unknown entities to known entities based on weighing factors. In this report, it refers to birds of unknown origin within the study area that are assigned to colonies based on distance to colony and colony size.
Biologically Defined Minimum Population Scale	Minimum regional population size of a particular bird species at a certain time of year, defined for a range of species in Furness (2015).
Cumulative Effects Framework	A Marine Scotland commissioned project to develop a tool for the assessment of cumulative effects for key receptors with respect to offshore renewable developments.
Export Cable Corridor (ECC)	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land (landward of MHWS) from the Offshore Array Area to the Onshore Substation, within which the export cables will be located.
Offshore Array Area	The offshore area within which the wind turbine generators, foundations, mooring lines and anchors, and inter-array cables and associated infrastructure will be located.
Ornithology	Ornithology is a branch of zoology that concerns the study of birds.
Special Protection Area	Special Protection Areas (SPAs) are selected to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, or certain regularly occurring migratory species.

Acronyms

Term	Definition
AEOI	Adverse Effect on Integrity
AOB	Apparently Occupied Burrows (bird census)
AON	Apparently Occupied Nests (bird census)

Term	Definition
AOS	Apparently Occupied Sites (bird census)
BDMPS	Biologically Defined Minimum Population Scale
CEF	Cumulative Effects Framework
ECC	Export Cable Corridor
IND	Number of individuals counted (bird census)
NS	NatureScot
SPA	Special Protection Area

1 Introduction

1.1 Background

1.1.1.1 When assessing the impact of a proposed offshore wind farm, it is crucial to determine the impact that such development will have on breeding seabird populations. Seabirds nest in colonies of variable sizes around the UK coastline (Burnell *et al.,* 2023) and most species have large foraging ranges at sea (Woodward *et al.*, 2019). Establishing the connectivity between marine renewable sites and colonies, which are often protected as Special Protected Areas (SPAs), is a key element of the assessment of impact. A theoretical approach has been developed by NatureScot (NatureScot, 2018) to determine the proportion of birds from SPA sites which use proposed development areas in the breeding season. In the non-breeding period the standard approach to apportioning utilises the information presented in Furness (2015). These approaches allow the user to calculate apportioning values which are then used to 'apportion' the impact of a marine renewable site to multiple SPAs.

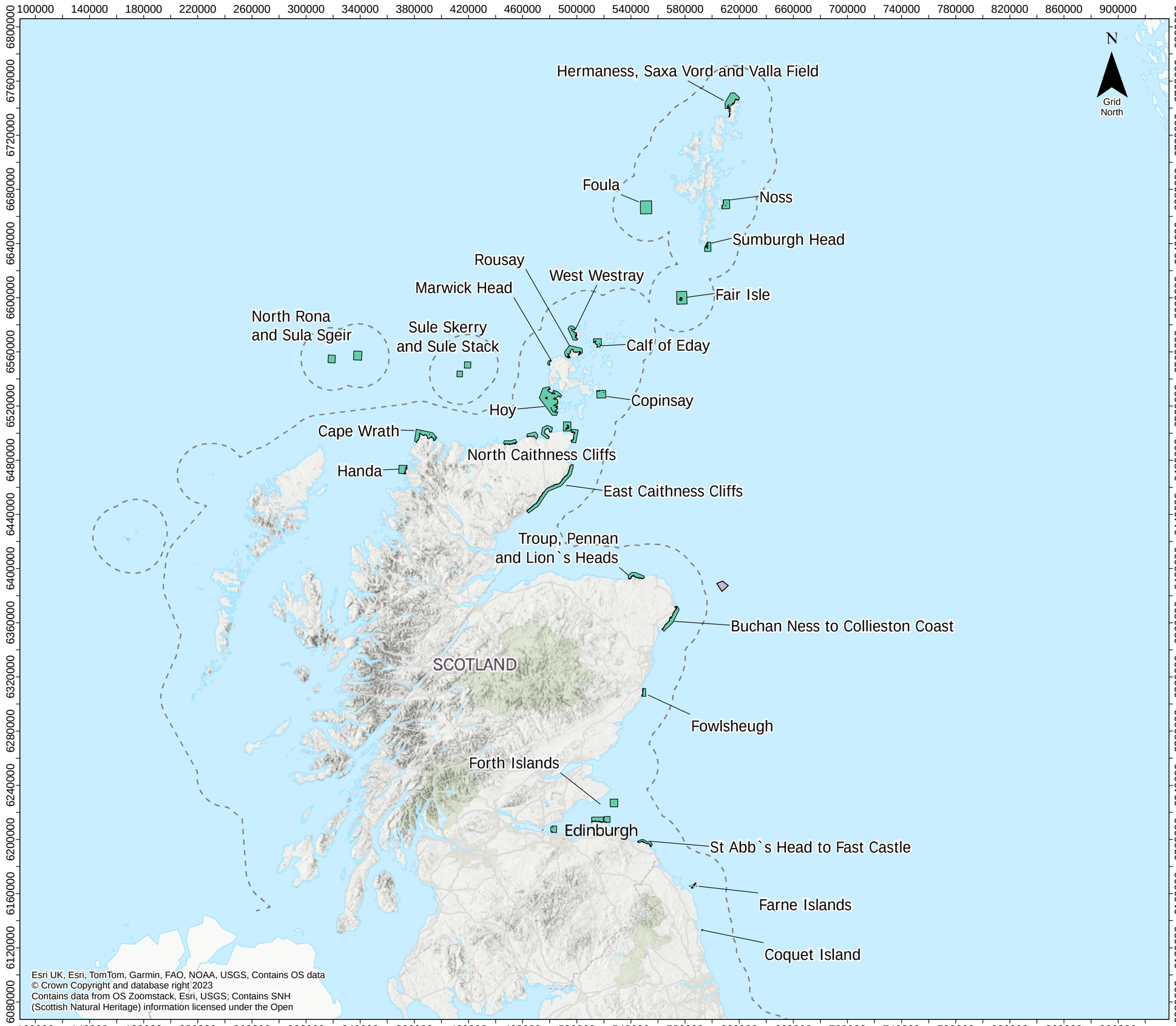
1.1.1.2 This technical report presents the apportioning method and presents the seasonal apportioning values applicable to the Salamander Offshore Wind Farm Project (hereafter referred to as 'Salamander Project') for SPAs that support qualifying species for which connectivity has been identified as part of LSE (Likely Significant Effect) screening (SBES, 2023) (**Figure 1-1**).

1.1.1.3 The resulting apportioning values are presented for each site and will be used in the Offshore Report to Inform Appropriate Assessment (RIAA) **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment)** to support the assessment of potential for an Adverse Effect on Integrity (AEOI).

Salamander

Figure 1-1

SPAs included in the apportioning assessment in relation to the OAA



Legend

- Offshore Array Area
- 12 nm limit
- Special Protection Areas (SPAs)

Coordinate System: WGS 1984 UTM Zone 30N

Vertical Datum : MLLW

Scale @ A3 : 1:2,750,000

0 80 160 Kilometers

0 20 40 80 Nautical Miles

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2 Methodology

2.1.1.1 Apportioning undertaken for the Salamander Project in the breeding season is based on the NatureScot 'theoretical approach' method for the breeding season (NatureScot, 2018). Apportioning during the non-breeding period (i.e. autumn and spring migration seasons and in winter) utilises the Biologically Defined Minimum Population Scales (BDMPS) approach developed by Furness (2015). These approaches are explained in more detail below.

2.1.1.2 One of the comments received from NatureScot on the Screening Report[1] dated May 2023 related to apportioning, specifically:

'We expect apportioning during the breeding season to be undertaken following the theoretical approach (Interim Guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs), with the exception of kittiwake, guillemot, razorbill and shag species, which should use the apportioning tool (Butler et al. 2020) (Butler, A., Carroll, M., Searle, K., Bolton, M., Waggitt, J., Evans, P., Rehfisch, M., Goddard, B., et al. (2020). Attributing seabirds at sea to appropriate breeding colonies. Scottish Marine and Freshwater Science 11(8). Marine Scotland Science.).

For most species, non-breeding season impacts should be apportioned using the BDMPS approach (Furness, R.W. (2015). Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, No.164.). Species where we expect a majority of the breeding season population to be present in the surrounding region in the non-breeding season (for example guillemot and herring gull), the correct population to assess impacts for in the non-breeding season is a regional one defined by the breeding season mean-max foraging range plus 1 standard deviation distance.

For guillemot, non-breeding season impacts should be apportioned based on breeding season regional populations with reference tracking data from Buckingham et al. (2022) (Buckingham, L., Bogdanova, M.I., Green, J.A., Dunn, R.E., Wanless, S., Bennett, S., Bevan, R.M., Call, A., Canham, M., Corse, C.J. and Harris, M.P., 2022. Interspecific variation in non-breeding aggregation: a multi-colony tracking study of two sympatric seabirds.).

Apportioning is not required for puffin in the non-breeding season. For herring gull during the non-breeding season – a correction factor should be applied to the breeding season regional population to account for the influx of non-UK and west coast UK birds into the North Sea BDMPS.'

2.1.1.3 The use of apportioning tools in the breeding season (including the Butler tool) relies on colony count data. That colony count data has recently been updated[2] and therefore the previous census (Seabird 2000) has been superseded by the fourth and most recent census published on 16th November 2023. To continue to rely on the previous and now historic colony count data from Seabird 2000 would produce unrealistic outputs, as in the intervening period significant changes in colony size and, importantly, proportionate

[1] https://marine.gov.scot/sites/default/files/appendix_i_-_consultation_representations_and_advice_5.pdf
[2] https://jncc.gov.uk/our-work/seabird-monitoring/

spread of the Scottish population between colonies will show (and as evidenced by scrutiny of the latest seabird census data).

2.1.1.4 Therefore, for the breeding birds, apportioning has been undertaken using the new colony count data and not the Seabird 2000 data. That does mean that the Butler tool (as referenced in **Paragraph 2.1.1.2** above by NatureScot) cannot be applied as that has not yet been updated to account for the more recent colony count data. It is understood that an updated version of the Butler tool that will draw on the recent colony count data will become available within the Cumulative Effects Framework (CEF) once that is publicly released, but a timescale for that was not available at the time the assessments were undertaken for the Salamander Project. As a result, the apportioning follows the theoretical approach referenced by NatureScot, and includes all species (therefore including kittiwake, guillemot, razorbill and shag) and in the context of the most recent colony count data.

2.1.1.5 The apportionment of guillemot and herring gull in the non-breeding season has been undertaken with regards to the advice given, as detailed in **Section 2.4**.

2.2 Identification of Species

2.2.1.1 The conclusions of HRA Screening for LSE are presented in the Screening Report (SBES, 2023), with the conclusions revisited in the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment)** including any updates following consultation. Where potential for LSE has been identified with respect to collision and/or distributional response (displacement and barrier impacts), those sites and species are included here. **Table 2-1** identifies the designated sites and associated features for which a LSE has been identified and therefore where apportioning values are required to apportion impacts from the Salamander Project to each relevant designated site. Although this table focusses on SPA populations (and, where relevant Ramsar population), consideration has been given to all breeding colonies within the relevant foraging range of a species. Apportioning values for non-SPA colonies are provided in **Appendix A**. Where a species is screened in for potential LSE but no individual birds have been identified in site specific survey (e.g. for sandwich tern, screened in for collision for Loch of Strathbeg SPA and Ramsar) or where a species is screened in for the offshore Export Cable Corridor (ECC) only and not the array (e.g. guillemot for Hoy SPA) or where the site and species are designated for foraging and not breeding (e.g. the Northumberland Marine SPA) no apportioning can be undertaken and therefore these sites and species are not included here. For a full list of all sites and species screened in for potential LSE, including the relevant pressures, please refer to Offshore RIAA (Appendix A: Update to Step 3 Screening for Assessment in Steps 4 and 5, **Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment**).

2.2.1.2 The Butler tool (Butler *et al.,* 2020) differs from the NatureScot approach by accounting for environmental heterogeneity and factors affecting species distribution allowing for segregation of foraging ranges between colonies. The inclusion of these factors may affect the apportioning values derived and at this stage in the assessment, it is not possible to use Butler tool. The Butler tool also empirically estimates colony-specific bird density for discrete locations from tracking data rather than using a pre-defined uniform density distance decay function which is identical for all relevant SPA feature combinations as in the NatureScot approach. By doing this the Butler tool should provide more biologically meaningful outputs. It is not certain what impact the use of the Butler tool may have on apportioning values as it will be dependent on various factors associated with each colony.

Table 2-1 Special Protection Areas and associated qualifying features for which apportioning is required for the Salamander Project.

SPA	Qualifying feature	Season of relevance
Buchan Ness to Collieston Coast	Guillemot	All seasons
	Kittiwake	All seasons
	Herring gull	All seasons
Calf of Eday	Kittiwake	All seasons
Cape Wrath	Kittiwake	All seasons
	Puffin	Breeding season only
Copinsay	Guillemot	All seasons
	Kittiwake	All seasons
Coquet Island	Kittiwake	All seasons
	Puffin	Breeding season only
East Caithness Cliffs	Kittiwake	All seasons
	Razorbill	All seasons
Fair Isle	Gannet	All seasons
	Kittiwake	All seasons
	Puffin	Breeding season only
Farne Islands	Puffin	Breeding season only
	Kittiwake	All seasons
Forth Islands	Puffin	Breeding season only
	Gannet	All seasons
Foula	Kittiwake	All seasons
	Kittiwake	All seasons

SPA	Qualifying feature	Season of relevance
	Puffin	Breeding season only
Fowlsheugh	Herring gull	All seasons
	Kittiwake	All seasons
	Razorbill	All seasons
	Guillemot	All seasons
Handa	Kittiwake	All seasons
Hermaness, Saxa Vord and Valla	Gannet	All seasons
Hoy	Kittiwake	All seasons
	Puffin	Breeding season only
Marwick Head	Kittiwake	All seasons
North Caithness Cliffs	Kittiwake	All seasons
	Puffin	Breeding season only
North Rona and Sula Sgeir	Gannet	All seasons
	Kittiwake	All seasons
Noss	Gannet	All seasons
	Kittiwake	All seasons
Rousay	Kittiwake	All seasons
St Abb's Head to Fast Castle	Kittiwake	All seasons
Sule Skerry and Sule Stack	Puffin	Breeding season only
	Gannet	All seasons
Sumburgh Head	Kittiwake	All seasons
Troup, Pennan and Lion's Heads	Guillemot	All seasons
	Herring gull	All seasons

SPA	Qualifying feature	Season of relevance
	Kittiwake	All seasons
	Razorbill	All seasons
West Westray	Kittiwake	All seasons

2.3 Apportioning of Impacts During the Breeding Period

2.3.1.1 In the breeding season, a population of birds in a given sea area is likely to comprise breeding adult birds from breeding colonies, immature birds (i.e. birds that have not yet reached breeding age) and non-breeding birds (i.e. birds that have reached breeding age but have not yet started breeding or are skipping a breeding season (sabbatical birds)). The proportion of each component must be estimated to allow the proportion of breeding birds to be extracted, as it is this component that is relevant for HRA. The apportioning values calculated here will be used within the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment)** to inform the assessments presented. In addition, consideration will be given to available site-specific information and information on the distribution and population structure of birds present in relevant sea areas.

2.3.1 Apportioning Impacts Between Protected Site and Non-Protected Site Breeding Colonies Within Foraging Range of the Salamander Project

2.3.1.2 The method followed NatureScot (2018) "Interim Guidance on Apportioning Impacts from Marine Renewable Developments to Breeding Seabird Populations in Special Protection Areas".

2.3.1.3 To identify those breeding colonies (Protected Sites and other) for which there may be connectivity between breeding birds and the Offshore Array Area + buffer, the recommended foraging range given by NatureScot (2023) has been used. In most cases, this is the mean-maximum foraging range + 1 standard deviation (SD) (i.e. the mean average of the maximum foraging trips recorded) as published by Woodward *et al.*, (2019). However, a different foraging range, often informed by site-specific information, is recommended for certain species or sites.

2.3.1.4 Next, three colony-specific weighting factors have been applied to each colony:

I. Colony size (with consistent count unit used between colonies for a species e.g. individuals or apparently occupied nests (AON)/burrows (AOB)/sites (AOS));

II. Distance of colony from the development site; and

III. Sea area (the area extent of the open sea within the foraging range of the relevant species).

2.3.1.5 Large colonies will contribute more individuals to the number of seabirds that occur within the Offshore Array Area + buffer, all other factors being equal. To account for this, a weighting factor based on colony size has been derived. Colony sizes for all species have been extracted from the recently published Seabirds Count (JNCC, 2022). The Seabirds Count is the fourth UK breeding seabird census, following on from the Seabird 2000 census. The Seabirds Count comprehensively surveyed seabird colonies, with surveys

undertaken from 2015 to 2021[3]. As such, the Seabirds Count data represents the best available data on breeding seabird colony sizes.

2.3.1.6 Weighting by distance from the colony has been calculated using the measured distance between the geometric centre of the Offshore Array Area to the colony. As birds radiate out from a colony density will decrease by a factor proportional to 1/distance^2 as area increases proportionally by πr^2. For the purposes of this assessment, a weighting factor based on 1/distance^2 has been used as advised by NatureScot (2018).

2.3.1.7 The available sea area for foraging has been measured by plotting a circle defined by the species-specific foraging range around the colony in ArcGIS and calculating the area of sea available to each seabird species. The fraction of the disc centered on the colony that is occupied by sea surface is then expressed as a decimal. As the density of birds will increase as the area of available foraging area decreases, this is used in the formula as 1/estimated area.

2.3.1.8 The three weighting factors (weightings by colony size, distance from the colony and sea area) have been combined to produce an overall weighting for each colony. Each factor is given equal weight in the combined weighting. This calculation is provided below:

$$\text{Colony Weight} = \frac{\text{Colony Population}}{\text{Sum of Populations}} \times \frac{\text{Sum of Distance}^2}{\text{Colony Distance}^2} \times \frac{{}^{1}/_{\text{Colony Sea Proportion}}}{\text{Sum of } ({}^{1}/_{\text{Colony Sea Proportions}})}$$

2.3.1.9 The weighting was then used to calculate the proportion of birds attributed to each colony ("proportional weight of colony") by calculating colony weight divided by sum of all colony weights.

2.3.1.10 To estimate the contribution of each SPA to the population of birds within the Offshore Array Area + buffer the total number of breeding birds at the latter (as informed by the site specific surveys) has been multiplied by the proportion allocated to the SPA ("proportional weight of colony"). This required the effect estimates count to be adjusted to account for the presence of birds aged as sub-adult, immatures or on sabbatical. The approaches used for defining the age composition of a species population at the Salamander Project is described below.

2.3.2 Immature Birds

2.3.2.1 A major part of any seabird population comprises immature birds. This is especially relevant for many of the species considered in this report with some species not breeding until they reach nine years of age. A proportion of immature birds return to natal waters during the breeding season, with the proportion of each immature age class increasing as individuals get closer to breeding age.

2.3.2.2 To determine the proportion of immature birds present within the Offshore Array Area + buffer, data from both years of the site-specific digital aerial surveys have been analysed (**Table 2-2**). This approach can only be used for gannet, kittiwake and large gull species as it is not possible from aerial surveys to identify the age class of birds of other species. Only those birds assigned to an age class have been included in the calculation in **Table 2-2**. However, the number of birds for which an age class was not assigned is also provided.

[3] The data from the Seabirds Count are assumed to be unaffected by the HPAI outbreak, which did not significantly impact breeding seabird colonies until 2022.

Table 2-2 Number of birds assigned to different age class categories during site-specific surveys undertaken during the breeding season of relevance for each species. Data are from both years of survey.

Species	Breeding season extent	Birds for which age was not identified	Number of adult-type birds	Number of immature birds	Proportion of immature birds (%)
Kittiwake	April to August	1,109	658	89	11.91
Herring gull	April to August	10	4	0	0
Gannet	March to September	385	201	13	6.07

2.3.2.3 The identification of kittiwake age classes at sea is difficult and in most cases impossible (with the exception of first summer of younger birds). Whilst one year old kittiwakes can be easily identified due to differences in plumage, second and third year old birds, which have not yet reached the age of first breeding, cannot (Coulson, 2011; Olsen and Larsson, 2003). Therefore, data on age class collected during surveys will potentially represent a considerable overestimate of the proportion of breeding adults present at the Offshore Array Area + buffer.

2.3.2.4 It is certain that an unknown proportion of the cohort of unaged 'adult type' kittiwakes at Offshore Array Area + buffer will include two and three year old birds. However, Coulson (2011) provides evidence that shows that immature kittiwake visit natal waters with increasing numbers of older immatures visiting breeding colonies. This is concurrent with mortality reducing the absolute number of birds from each successive year class of kittiwake in the species wider population. To therefore calculate an apportioning value for the breeding season in respect to the number of two and three year old kittiwakes at the Offshore Array Area + buffer, the analysis uses survival rates for immature kittiwake from Horswill and Robinson (2015) (**Table 2-3**). The apportioned values will likely remain an under-estimate for the second and third year immatures as proportionately those cohorts show a much greater affinity for natal waters than first year birds.

Table 2-3 Estimated breeding season contribution of immatures birds predicted to be present at the Offshore Array Area + buffer using immature proportions as calculated from survival rates and numbers of one year old birds recorded on baseline survey transects.

Analysis step	Formula (using the parameters identified as part of each analysis step)	Value
(a) Survival rate of juvenile birds	N/A	0.79
(b) Survival rate of other immature age classes	N/A	0.854
(c) % of kittiwake at the Offshore Array Area + buffer assigned to one year old birds	N/A	11.91%

Analysis step	Formula (using the parameters identified as part of each analysis step)	Value
% of kittiwake at the Offshore Array Area + buffer assigned to other immature age classes (d) Two year old birds (e) Three year old birds	d = [{(a) x b} / a] x c e = ([{(a) x b} x b] / a) x c	10.17% 8.68%
(f) % of kittiwakes at the Offshore Array Area + buffer assigned to adults	f = 100% - (d + e + c)	69.23%

2.4 Apportioning of Impacts During the Non-Breeding Period

2.4.1.1 For all species except guillemot and herring gull, the calculation of apportioning values for non-breeding seasons (post-breeding, non-breeding and pre-breeding) has followed the approach used previously in the application and examination documentation for multiple offshore wind farms (e.g. Berwick Bank, West of Orkney, East Anglia THREE Ltd. 2015, Forewind 2013, Smart Wind 2015). To calculate apportioning values, the contribution of adult birds from an individual designated site (as estimated by Furness (2015)) to the relevant BDMPS population for each species/season combination is divided by the total BDMPS population. The calculated value is the proportion of the BDMPS population represented by adult birds from the designated site under consideration. It should be noted that no updates have been made to the population data presented in Furness (2015) as any updates will not be contemporaneous with those data not updated. For any designated site not named in Furness (2015), the proportion of birds present in the relevant BDMPS areas in each season has been taken from the nearest named designated site.

2.4.1.2 For guillemot, NatureScot (2023) advise that birds typically remain in the vicinity of their breeding colonies. Therefore, a "local total population" has been calculated as follows:

- Sum counts of breeding individuals from colonies within foraging range of the Offshore Array area + buffer as per the breeding season calculation.
- Counts of breeding individuals are converted to breeding pairs using the formula *1 individual counted = 0.67 pairs* (Walsh et al., 1995).
- Breeding pairs are converted to total adults using the formula *1 pair = 2 adults*.
- Total adults converted to total population by using the formula *total population = total adults / (1-0.587)* where 0.587 is the proportion of adults in the population.

2.4.1.3 For the purpose of this apportionment exercise, it is assumed the local total population is distributed evenly and therefore the apportionment to a given SPA is calculated as *SPA population / total local population*. It should be noted that this assumption of even distribution is contrary to the recent evidence such as the tracking study reported in Buckingham *et al.* (2022). Such tracking data may be reviewed in more detail to establish or exclude connectivity to certain colonies in the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment)**. However, as only a small number of birds from a limited selection of

colonies were tracked, the data do not enable apportionment to all potential colonies, and therefore have not been applied in this report.

2.4.1.4 For herring gull, NatureScot (2023) advise that wintering gulls exhibit similar centrally-placed foraging behaviour as breeding seabirds, returning to the coast to roost. Herring gull in Britain do not migrate, and show only limited dispersal (Furness, 2015). There is very limited movement of west coast birds to the North Sea (Furness, 2015). However, in addition to British-breeding birds, the herring gull population in the North Sea UK waters is bolstered by international migrants, particularly from the Barents Sea (Furness, 2015). Furness (2015) estimate the non-breeding UK North Sea and Channel BDMPS population to be 466,511, consisting of 331,381 birds from UK colonies and 135,130 from overseas. This equates to 71.03% of birds present in the non-breeding season to be UK birds. Therefore, the non-breeding season apportionment is based on the breeding season apportionment but with a correction factor of 0.7103 applied to the apportioning value to account for the influx of overseas birds.

3 Results

3.1.1.1 Based upon calculations undertaken by the approach described above, the apportioning values for each SPA feature with connectivity to the Offshore Array Area + buffer are presented below.

3.2 Special Protection Area Weighted Proportions: Kittiwake

3.2.1.2 The calculation of apportioning values in the breeding season for all SPA colonies from which the foraging range of kittiwake shows potential connectivity with the Offshore Array Area + buffer is presented in **Table 3-1**. A breakdown of apportioning values for non-SPA colonies is presented in **Appendix A**.The approach to apportionment outside the breeding season produces different values for the post-breeding (autumn migration) and the pre-breeding (spring migration) seasons; however, the assessment in the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assessment)** only considers a single non-breeding season. Therefore, whilst both seasons are presented in in **Table 3-2**, the assessment in the RIAA uses the values from the pre-breeding season as the non-breeding season value.

Table 3-1 Calculation of apportioning values for kittiwake in the breeding season for Special Protection Areas within foraging range.

SPA name	Seabird Count colony size (AON) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value
Buchan Ness to Collieston Coast	11,295	39	0.7284	4.8078	0.5008
Calf of Eday	336	201	0.8588	0.0045	0.0005
Cape Wrath	3,622	245	0.7999	0.0160	0.0037
Copinsay	955	167	0.8327	0.0192	0.0020
Coquet Island	466	255	0.5951	0.0056	0.0006
East Caithness Cliffs	24,479	134	0.7716	0.0020	0.0714
Fair Isle	448	215	0.9124	0.0049	0.0005
Farne Islands	4,402	216	0.6134	0.0674	0.0070
Forth Islands	4,542	193	0.5981	0.0187	0.0105
Foula	425	285	0.9514	0.0026	0.0003

[4] Where a colony consists of multiple subsites average values are provided for distance to the Offshore Array Area and proportion of foraging range at sea.

SPA name	Seabird Count colony size (AON) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value
Fowlsheugh	14,039	99	0.6718	0.6631	0.1028
Handa	3,749	243	0.7897	0.0354	0.0037
Hoy	266	171	0.8190	0.0040	0.0004
Marwick Head	906	207	0.838	0.0117	0.0012
North Caithness Cliffs	5,571	147	0.8014	0.0061	0.0107
North Rona and Sula Sgeir	712	310	N/A - beyond foraging range		
Noss	179	275	0.9688	0.0011	0.0001
Rousay	330	197	0.8482	0.0031	0.0005
St Abb's Head to Fast Castle	5,150	199	0.6023	0.0891	0.0104
Sumburgh Head	966	244	0.9457	0.0012	0.0008
Troup, Pennan and Lion's Head	10,616	65	0.7330	0.0002	0.1636
West Westray	2,755	207	0.8599	0.0204	0.0033

Table 3-2 Calculation of post-breeding and pre-breeding season apportioning values for kittiwake. The pre-breeding has been used for the non-breeding season within the Report to Inform Appropriate Assessment.

SPA	Post-breeding season (August to December)			Pre-breeding season (January to April)		
	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value
Buchan Ness to Collieston Coast	UK North Sea = 829,937	15,050	0.0181	UK North Sea = 627,816	15,050	0.0240
Calf of Eday		896	0.0011		896	0.0014
Cape Wrath		207	0.0002		207	0.0003
Copinsay		799	0.0010		799	0.0013
East Caithness Cliffs		48,492	0.0584		48,492	0.0772
Fair Isle		925	0.0011		925	0.0015
Farne Islands		4,132	0.0050		4,132	0.0066
Forth Islands		3,720	0.0045		3,720	0.0059
Foula		392	0.0005		392	0.0006
Fowlsheugh		11,204	0.0135		11,204	0.0178
Handa		37	0.0000		37	0.0001
Hoy		476	0.0006		476	0.0008
Marwick Head		631	0.0008		631	0.0010
North Caithness Cliffs		12,180	0.0147		12,180	0.0194
North Rona and Sula Sgeir		25	0.0000		25	0.0000
Noss		608	0.0007		608	0.0010
Rousay		2,117	0.0026		2,117	0.0034
St Abb's Head to Fast Castle		4,084	0.0049		4,084	0.0065

SPA	Post-breeding season (August to December)			Pre-breeding season (January to April)		
	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value
Troup, Pennan and Lion's Head		17,875	0.0215		17,875	0.0285
West Westray		14,466	0.0174		14,466	0.0230

3.3 Special Protection Area Weighted Proportions: Herring Gull

3.3.1.3 The calculation of apportioning values for all SPA colonies from which the foraging range of herring gull shows potential connectivity with the Offshore Array Area + buffer is presented in **Table 3-3**. The non-breeding season apportionment is calculated by applying a correction factor to the breeding season apportionment, as described in **Section 2.4.1.4** A breakdown of apportioning values for non-SPA colonies is presented in **Appendix A**.

Table 3-3 Calculation of apportioning values for herring gull in the breeding season and the non-breeding season for Special Protection Areas within foraging range.

SPA name	Seabird Count colony size (AON) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value in the breeding season	Apportioning value in the non-breeding season
Buchan Ness to Collieston Coast	2,077	39	0.7352	3.7371	0.8237	0.2220
Fowlsheugh	1,035	99	N/A - beyond foraging range			
Troup, Pennan and Lion's Head	546	65	0.6810	0.1390	0.0826	0.0580

3.4 Special Protection Area Weighted Proportions: Guillemot

3.4.1.4 The Offshore Array Area + buffer is within the foraging range of guillemot from three SPA colonies for which the species is a qualifying feature. Apportioning values for non-SPA colonies are presented in **Appendix A**. Calculation of apportioning values for the breeding season and non-breeding season are presented in **Table 3-4** and **Table 3-5**. Please note that for guillemot and razorbill, for the calculation from the population census

(individuals) "1 IND" counted at the colony is assumed to equal 0.67 breeding pairs, and therefore 1 IND = 1.34 breeding adults. (Harris 1989).

Table 3-4 Calculation of apportioning values for guillemot in the breeding season for Special Protection Areas within foraging range.

SPA	Seabird Count colony size (IND) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value
Buchan Ness to Collieston Coast	29,433	39	0.7428	2.7604	0.7567
Copinsay	18,479	160	N/A - beyond foraging range		
Fowlsheugh	69,828	99	N/A - beyond foraging range		
Troup, Pennan and Lion's Head	23,801	66	0.6642	0.8310	0.2277

Table 3-5 Calculation of non-breeding season (August to February) apportioning values for guillemot.

SPA	Total local population	SPA population (adults)	Apportioning value
Buchan Ness to Collieston Coast	179,596	39,440	0.2196
Copinsay		N/A - beyond foraging range	
Fowlsheugh		N/A - beyond foraging range	
Troup, Pennan and Lion's Head		31,893	0.1776

3.5 Special Protection Area Weighted Proportions: Razorbill

3.5.1.5 The calculation of apportioning values in the breeding season for all colonies from which the foraging range of razorbill shows potential connectivity with the Offshore Array Area + buffer is presented in **Table 3-6**. A breakdown of apportioning values for non-SPA colonies is presented in **Appendix A**. A single non-breeding season for the apportionment assessment was used, however calculation of apportioning values for the autumn migration, winter and spring migration seasons are presented **Table 3-7**. Please note that for guillemot and razorbill, for the calculation from the population census (individuals) "1 IND" counted at the colony is assumed to equal 0.67 breeding pairs, and therefore 1 IND = 1.34 breeding adults. (Harris 1989).

Table 3-6 Calculation of apportioning values for razorbill in the breeding season for Special Protection Areas within foraging range.

SPA name	Seabird Count colony size (IND) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value
East Caithness Cliffs	30,129	134	N/A - beyond foraging range		
Fowlsheugh	14,063	99	0.5903	1.3970	0.2390
Troup, Pennan and Lion's Heads	4,518	65	0.6603	0.9080	0.1554

Table 3-7 Calculation of post-breeding, winter and pre-breeding season apportioning values for razorbill. The winter season has been used for the non-breeding season within the Offshore Report to Inform Appropriate Assessment

SPA	Post-breeding season (August to October)			Winter (November and December)			Pre-breeding season (January to March)		
	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value	BDMPS population (no. of individuals)	No. of adults from SPA in the UK North Sea	Apportioning value
East Caithness Cliffs	UK North Sea and Channel = 591,874	25,000	0.0422	UK North Sea and Channel = 218,622	7,500	0.0343	UK North Sea and Channel = 591,874	7,500	0.0422
Fowlsheugh		7,048	0.0119		2,114	0.0097		2,114	0.0119
Troup, Pennan and Lions Head		3,486	0.0059		1,046	0.0048		1,046	0.0059

3.6 Special Protection Area Weighted Proportions: Puffin

3.6.1.6 The calculation of apportioning values in the breeding season for all colonies from which the foraging range of puffin shows potential connectivity with the Offshore Array Area + buffer is presented in **Table 3-8**. A breakdown of apportioning values for non-SPA colonies is presented in **Appendix A**.

Table 3-8 Calculation of apportioning values for puffin in the breeding season for Special Protection Areas within foraging range.

SPA name	Seabird Count colony size (AOB) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range at sea[4]	Resulting weight for colony	Apportioning value
Cape Wrath	2,244	246	0.7753	0.0100	0.0075
Coquet Island	25,029	255	0.5777	0.1414	0.1023
Fair Isle	6,666	206	0.9242	0.0332	0.0240
Farne Islands	43,752	223	0.5885	0.3189	0.2308
Forth Islands	42,923	197	0.5534	0.4910	0.3556
Foula	4,234	285	N/A - beyond foraging range		
Hoy	430	171	0.8040	0.0030	0.0023
North Caithness Cliffs	3,039	147	0.7783	0.0110	0.0187
Sule Skerry and Sule Stack	47,742	248	0.8206	0.2008	0.1454

3.7 Special Protection Area Weighted Proportions: Gannet

3.7.1.7 The calculation of apportioning values in the breeding season for all colonies from which the foraging range of gannet shows potential connectivity with the Offshore Array Area + buffer presented in **Table 3-9**. A breakdown of apportioning values for non-SPA colonies is presented in **Appendix A**. Calculation of apportioning values for use in the post-breeding and pre-breeding seasons are presented in **Table 3-10.**

Table 3-9 Calculation of apportioning values for gannet in the breeding season for Special Protection Areas within foraging range.

SPA	Seabird Count colony size (AON/AOS) (JNCC/BTO 2023)	Distance from colony to Offshore Array Area (km)[4]	Proportion of foraging range as sea[4]	Resulting weight for colony	Apportioning value
Fair Isle	4,971	215	0.8535	0.0662	0.0210
Forth Islands	75,259	193	0.7332	1.4440	0.4587
Hermaness, Saxa Vord and Valla Field	29,562	360	0.8637	0.1389	0.0441
North Rona and Sula Sgeir	12,271	332	0.8822	0.0661	0.0210
Noss	13,765	282	0.8505	0.1068	0.0339
Sule Skerry and Sule Stack	9,065	248	0.8794	0.0880	0.0279

Table 3-10 Calculation of post-breeding and pre-breeding season apportioning values for gannet. The pre-breeding season has been used for the non-breeding season within the Offshore Report to Inform Appropriate Assessment

SPA	Post-breeding season (September to November)			Pre-breeding season (December to March)		
	BDMPS population (no. of individuals)	SPA population	Apportioning value	BDMPS population (no. of individuals)	SPA population	Apportioning value (%)
Fair Isle	UK North Sea and Channel = 456,298	2,332	0.0138	UK North Sea and Channel = 248,385	2,332	0.0221
Forth Islands		43,200	0.2432		43,200	0.3127
Hermaness, Saxa Vord and Valla Field		32,800	0.0854		32,800	0.1373
North Rona and Sula Sgeir		20,800	0.0040		20,800	0.0000
Noss		13,720	0.0342		13,720	0.0551

SPA	Post-breeding season (September to November)			Pre-breeding season (December to March)		
	BDMPS population (no. of individuals)	SPA population	Apportioning value	BDMPS population (no. of individuals)	SPA population	Apportioning value (%)
Sule Skerry and Sule Stack		11,800	0.0020		11,800	0.0000

4 Discussion

4.1.1.1 This technical report's use of NatureScot's theoretical approach to apportioning impacts to breeding seabirds in SPAs and its consideration of immature birds results in certain assumptions that may lead to under or over-estimates of the proportion of breeding adult birds present in a given area. Examples of these are presented below in **Table 4-1**.

Table 4-1 Assumptions which may affect bird density estimates.

Group	Assumption
Breeding adult birds	That birds are evenly distributed at sea, with this being extremely unlikely due to the known patchy distribution of prey species and information gained from tracking studies.
	That seabird colonies are independent of one another.
	Larger foraging ranges at larger breeding colonies due to competition and prey depletion closer to the colony (Storer-Ashmole's Halo; Elliott et al., 2009).
	The use of mean-maximum plus one standard deviation foraging ranges.
Immature birds	Limited information is available on the proportion of immature birds that return to natal waters and the distribution of immature birds within natal waters.

4.1.1.2 Consideration has been given in the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assesment)** to these assumptions, including where available site-specific tracking studies, and what effect they may have on the overall magnitude of any impacts. Further information on some of the assumptions identified above is provided below.

4.2 Foraging Range

4.2.1.1 NatureScot (2023) typically recommends the use of the mean-maximum foraging range plus one standard deviation of each species. The use of the mean-maximum foraging range plus one standard deviation is considered to be precautionary. However, whilst it ensures a greater number of SPAs are included, it dilutes the total apportioned impact between more colonies, reducing the apportioned impact to colonies closer to the project.

4.2.1.2 The use of a mean-maximum foraging range plus one standard deviation represents a highly precautionary approach regardless of its application as, although it ensures, from a RIAA screening perspective, that no SPAs are erroneously omitted from the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assesment)** the likelihood of an LSE occurring on any project beyond mean-maximum foraging range is highly unlikely. A mean-maximum foraging range already represents the average of the maximum foraging ranges exhibited by birds across multiple studies. A standard deviation of a mean value represents the amount by which individual values differ from the mean value. It is an expression of confidence in the mean value and should not be applied as an absolute value as in the application of foraging ranges for screening. This is particularly so when the average value is already an average of maximum values from multiple studies which may not reflect the true foraging behaviour of all individuals from a colony.

4.2.1.3 However, despite the limitations of the application of a mean-maximum foraging range plus one standard deviation for apportioning purposes as outlined above, its application is necessary to ensure that impacts can be apportioned to all SPAs for which LSE has been identified. The use of a mean-maximum foraging range only would result in a 0% apportioning value being applied to all colonies located at a distance between the mean-maximum foraging range and mean-maximum foraging range plus one standard deviation.

4.3 Immature Proportions

4.3.1.4 Although any population of breeding seabirds has an immature component associated with it, the spatial distribution of that component is often very different to the breeding adult component, especially in the breeding season. For many seabird species, immature birds gradually begin to return to natal waters in the breeding season as they get nearer to breeding age. The proportion of older immature age classes in natal waters is therefore higher than the proportion of younger immature age classes. In addition, the distribution of immature birds in natal waters may be dictated by proximity to breeding colonies either because birds are prospecting for breeding sites or due to competition with breeding adult birds. Where all immature classes of a species can be reliably identified during baseline surveys this is less of an issue however, for species for which only some age classes can be identified during baseline surveys resulting immature proportions represent an under-estimate.

4.3.1.5 In the context of this apportioning appendix this is relevant to kittiwake. Whilst one year old kittiwakes can be easily identified due to differences in plumage, second and third year old birds, which have not yet reached the age of first breeding, cannot (Coulson, 2011; Olsen and Larsson, 2003). Therefore, data on age class collected during surveys will potentially represent a considerable overestimate of the proportion of breeding adults present in a given sea area.

4.3.1.6 It is certain that an unknown proportion of the cohort of unaged 'adult type' kittiwakes at the Offshore Array Area + buffer will include two and three year old birds. Coulson (2011) provides evidence that shows that immature kittiwake visit natal waters with increasing numbers of older immatures visiting breeding colonies. This therefore supports the conclusion that the approach proposed to calculate an apportioning value for the breeding season will under-estimate the proportion of second and third year immatures which will show a much greater affinity for natal waters than first year birds.

4.3.1.7 As detailed in **Section 2.3**, an approach has been applied that aims to address the underestimation. Whilst maintaining the proportion represented of each year class of immatures at the Offshore Array Area + buffer, mortality reduces the absolute number of birds present from each successive year class of kittiwake. In calculating the number of two and three year old kittiwakes at the Offshore Array Area + buffer , the analysis uses survival rates of each immature age class of kittiwake that follows rate provided in Horswill and Robinson (2015). This approach is considered precautionary for the following reasons:

- It is known that older immature age classes that are not identifiable during baseline surveys will be present at the Offshore Array Area + buffer;
- A smaller proportion of one year old birds are likely to be present in natal waters with a much greater proportion of older age classes of immature birds showing affinity with natal waters and therefore the proportions of older age classes is likely underestimated when applying the approach.

4.3.1.8 The identification of immature age classes of large gulls and gannets during baseline surveys is far easier than for kittiwakes and the immature proportions calculated for these species are therefore considered to be more representative. The identification of immature age classes of auk species is not possible from

baseline surveys (with the exception of juvenile birds in the post-breeding season) and, where necessary, other sources will be relied upon within the Offshore RIAA **(Volume RP.A.1, Report 1: Report to Inform Appropriate Assesment)**.

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Appendix A Breeding SeasonApportioning Values for Non-Special Protection Area Colonies

Guillemot

Table A-1 Apportioning values for guillemot at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (IND)	Apportioning value
Buchan Ness to Collieston Coast SPA	39	29,433	0.7567
Burn of Daff	84	347	0.0020
Findon Ness - Hare Ness	80	1,177	0.0090
Girdle Ness to Hare Ness	78	222	0.0020
Newton Hill	88	3	0.0000
Newtonhill - Hall Bay	87	311	0.0020
Troup, Pennan and Lion's Heads SPA	66	23,801	0.2277
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	58	59	0.0008

Razorbill

Table A-2 Apportioning values for razorbill at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (IND)	Apportioning value
Buchan Ness to Collieston Coast SPA	39	5,826	0.5042
Burn of Daff	84	148	0.0030
Catterline to Inverbervie	104	2,785	0.0440
Findon Ness - Hare Ness	81	929	0.0220
Fowlsheugh SPA	99	14,063	0.2390
Girdle Ness to Hare Ness	77	297	0.0070
Hall Bay to Craigeven Bay	91	5	0.0001
Newton Hill	89	140	0.0030
Newtonhill - Hall Bay	87	161	0.0030
Portknockie	100	68	0.0014
Portsoy to Cullen	92	46	0.0010
Rosehearty to Bay of Cullen	75	81	0.0024
South Ronaldsay	163	431	0.0020

Master site in Seabird Count	Distance (km)	Count (IND)	Apportioning value
Stonehaven to Wine Cove	96	280	0.0050
Strathlene to Portknockie	101	28	0.0005
Troup, Pennan and Lion's Heads SPA	65	4,518	0.1554
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	58	148	0.0061

Puffin

Table A-3 Apportioning values for puffin at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (AOB)	Apportioning value
Auskerry SPA	177	223	0.0013
Bigton to Maywick	264	110	0.0003
Birsay Cliffs - Point of Buckquoy to Loop of Cruie	209	38	0.0000
Brough of Birsay	210	5	0.0000
Buchan Ness to Collieston Coast SPA	39	176	0.0254
Burn of Daff	83	7	0.0002
Caithness - Wick Bay to Freshwick Bay	145	3	0.0000

Master site in Seabird Count	Distance (km)	Count (AOB)	Apportioning value
Calf of Eday SPA	202	48	0.0000
Cape Wrath SPA	246	2,244	0.0075
Carr Craig, Eyebroughy and Haystack	216	2,641	0.0170
Catterline to Inverbervie	103	10	0.0000
Copinsay SPA	167	878	0.0060
Coquet Island SPA	255	25,029	0.1023
Costa Head	207	23	0.0000
Deerness	175	2	0.0000
Droman to Geodha Ruadh na Fola	253	396	0.0012
East Caithness Cliffs SPA	145	184	0.0020
Eynhallow	203	87	0.0004
Fair Isle SPA	215	6,666	0.0240
Faraid Head/ Balnakeil	236	119	0.0000
Farne Islands SPA	223	43,752	0.2308
Findon Ness - Hare Ness	81	19	0.0010

Master site in Seabird Count	Distance (km)	Count (AOB)	Apportioning value
Flotta & Calf of Flotta	173	6	0.0000
Forth Islands SPA	197	42,923	0.3556
Fowlsheugh SPA	99	159	0.0040
Green Holms	193	33	0.000
Handa SPA	250	139	0.0002
Horse Island, Colsay, Little and Ladies Holm to Fitful Head	258	93	0.0005
Horse of Copinsay	167	8	0.0002
Hoy and South Walls	175	25	0.0001
Hoy SPA	185	430	0.0023
Lunan Bay to Arbroath	139	20	0.0000
Marwick Head SPA	207	1	0.0000
Melvich to Duncansby Stacks SSSI	173	9	0.0000
Newton Hill	89	2	0.0000
Newtonhill - Hall Bay	87	3	0.0000
No Ness to Levenwick and Boddam to Virkie	262	8	0.0000

Master site in Seabird Count	Distance (km)	Count (AOB)	Apportioning value
North Caithness Cliffs SPA	177	3,039	0.0187
North Sutherland Islands	212	2	0.0000
Papa Westray - Tysties	218	25	0.0001
Papa Westray (North Hill and Holm) SPA	217	36	0.0000
Pentland Firth Islands SPA	161	4,570	0.0360
Portsoy to Cullen	93	16	0.0004
Rerwick Head to Mirkady Point	175	1	0.0000
Rousay SPA	205	101	0.0000
Rysa Little and Cava	183	1	0.0000
Sanday	200	8	0.0000
Shapinsay (Coastal)	183	9	0.0000
Smoo to Melvich	193	21	0.0000
South Ronaldsay	168	24	0.0000
South Walls	175	1	0.0000
St. Ninian's Isle	263	72	0.0000

Master site in Seabird Count	Distance (km)	Count (AOB)	Apportioning value
Stonehaven to Wine Cove	96	1	0.0000
Stronsay	181	1	0.0000
Sule Skerry and Sule Stack SPA	248	47,742	0.1454
Sumburgh Head Quarries	251	20	0.0001
Sumburgh Head SPA	252	1,160	0.0030
Sumburgh to Peerie Voe of Spiggie	257	1,537	0.0040
Switha	172	56	0.0004
Troup, Pennan and Lion's Heads SPA	65	30	0.0020
West Westray SPA	216	38	0.0000
Westray - Rapness	208	1,534	0.0063
Westray and adjacent Holms - Tysties	218	56	0.0002
Yesnaby to Marwick (West Mainland)	203	7	0.0000

Herring gull

Table A-4 Apportioning values for herring gull at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Buchan Ness to Collieston Coast SPA	39	2,077	0.8237
Burn of Daff	84	163	0.0200
Girdle Ness to Hare Ness	77	45	0.0060
Rosehearty to Bay of Cullen	76	105	0.0140
Troup, Pennan and Lion's Heads SPA	65	192	0.0826

Gannet

Table A-5 Apportioning values for gannet at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (AON/AOS)	Apportioning value
Ailsa Craig SPA	359	33,226	0.0656
Fair Isle SPA	215	4,971	0.0210
Flamborough and Filey Coast SPA	397	13,392	0.0236
Flannan Isles SPA	387	5,280	0.0069

Forth Islands SPA	193	75,259	0.4587
Foula SPA	285	2,443	0.0057
Hermaness, Saxa Vord and Valla Field SPA	360	29,562	0.0441
Marwick Head SPA	207	9	0.0000
Mingulay and Berneray SPA	400	8	0.0000
Monreith Cliffs and Scar Rocks	395	2,376	0.0041
North Rona and Sula Sgeir SPA	332	12,271	0.0210
Noss SPA	282	13,765	0.0339
Rockall	448	28	0.0000
St Abb's Head to Fast Castle SPA	200	11	0.0001
St Kilda SPA	434	60,290	0.0623
Sule Skerry and Sule Stack SPA	248	9,065	0.0279
Troup, Pennan and Lion's Heads SPA	67	4,825	0.2196
West Westray SPA	220	1,384	0.0054

Kittiwake

Table A-6 Apportioning values for kittiwake at all colonies in the breeding season

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Bigton to Maywick	264	22	0.0000
Bressay	278	46	0.0000
Brough of Birsay	210	3	0.0000
Buchan Ness to Collieston Coast SPA	39	11,295	0.5008
Burn of Daff	84	1,093	0.0110
Caithness - Wick Bay to Freshwick Bay	145	45	0.0001
Calf of Eday SPA	202	336	0.0005
Cape Wrath SPA	245	3,622	0.0037
Carr Craig, Eyebroughy and Haystack	216	557	0.0010
Catterline to Inverbervie	104	2,047	0.0140
Copinsay SPA	167	955	0.0020
Coquet Island SPA	255	466	0.0006
Costa Head	208	52	0.0001

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Deerness	171	5	0.0000
Droman to Geodha Ruadh na Fola	251	164	0.0000
East Caithness Cliffs SPA	147	24,479	0.0714
Eye Peninsula - Lewis	301	38	0.0000
Eyemouth to Burnmouth	204	709	0.0006
Eynhallow	203	38	0.0001
Fair Isle SPA	215	448	0.0005
Faraid Head/ Balnakeil	236	328	0.0001
Farne Islands SPA	223	4,402	0.0070
Findon Ness - Hare Ness	81	1,177	0.0130
Forth Islands SPA	193	4,542	0.0105
Foula SPA	285	425	0.0003
Fowlsheugh SPA	99	14,039	0.1028
Fraserburgh	48	81	0.0023
Girdle Ness to Hare Ness	77	2,093	0.0250

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Green Holms	193	32	0.0000
Hall Bay to Craigeven Bay	91	79	0.0007
Handa SPA	250	3,749	0.0037
Holm	170	14	0.0000
Hopeman Bay	133	560	0.0021
Horse Island, Colsay, Little and Ladies Holm to Fitful Head	249	12	0.0000
Horse of Copinsay	167	72	0.0001
Howick - Cullornose Point - Dunstanburgh Castle Point	241	1,068	0.0007
Hoy and Southwalls	174	33	0.0001
Hoy SPA	189	266	0.0004
Huxter to Brindister	300	25	0.0000
Kyleakin to Portree	282	2	0.0000
Lunan Bay to Arbroath	142	538	0.0018
Marsden Bay	293	3,344	0.0033
Marwick Head SPA	207	906	0.0012

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Maywick to Scalloway	269	5	0.0000
Montrose to Lunan Bay	133	370	0.0016
Newton Hill	89	2	0.0000
Newtonhill - Hall Bay	87	298	0.0028
No Ness to Levenwick and Boddam to Virkie	261	285	0.0000
North Caithness Cliffs SPA	176	5,571	0.011
North Sutherland Islands	213	71	0.0001
North Sutor to Shandwick	167	279	0.0007
Noss SPA	282	179	0.0001
Papa Westray (North Hill and Holm) SPA	219	15	0.0000
Pentland Firth Islands SPA	161	131	0.0002
Peterhead	38	33	0.0015
Portknockie	100	309	0.0021
Portsoy to Cullen	93	516	0.000
Rerwick Head to Mirkady Point	178	3	0.0000

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
River Tyne to Seaton Sluice	295	1,257	0.0001
Rosehearty to Bay of Cullen	74	28	0.0000
Rousay - South East	200	127	0.0002
Rousay SPA	205	330	0.0005
Sanday - Stove to Kettletoft	196	51	0.0001
Scapa Bay to St. Marys	180	23	0.0000
Seahouses	228	206	0.0003
Shapinsay (Coastal)	183	17	0.0000
Skeld, Westerwick and Culswick	285	91	0.0000
Skye - Strathaird	299	50	0.0000
Smoo to Melvich	221	50	0.0000
South Ronaldsay	167	51	0.0000
South Sutor	167	119	0.0001
St Abb's Head to Fast Castle SPA	199	5,150	0.0104
St. Ninian's Isle	263	67	0.0000

Master site in Seabird Count	Distance (km)	Count (AON)	Apportioning value
Stoer Headland	257	257	0.0002
Stonehaven to Wine Cove	96	280	0.0020
Stronsay	183	147	0.0001
Sule Skerry and Sule Stack SPA	248	93	0.0001
Sumburgh Head SPA	251	966	0.0008
Sumburgh to Peerie Voe of Spiggie	256	48	0.0000
Troup, Pennan and Lion's Heads SPA	65	10,616	0.1636
Vaila	289	44	0.0000
Walls to Dales	293	20	0.0000
West Burra - Shetland	274	29	0.0000
West Westray SPA	217	2,755	0.0033
Yesnaby - Ness Point, Stromness	199	6	0.0000
Yesnaby to Marwick (West Mainland)	202	1	0.0000
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	58	387	0.0078