



Sporad na Mara Offshore Wind Farm

Offshore Project

Offshore Report to Inform Appropriate Assessment

Appendix D: Offshore Ornithology Apportioning

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1.1 This appendix of the **Offshore Report to Inform Appropriate Assessment (RIAA)** presents the apportioning method and the seasonal apportioning values applicable to the offshore component of the offshore Sporad na Mara Offshore Wind Farm (hereafter referred to as the 'Project') for Special Protection Areas (SPAs) that support qualifying species for which connectivity has been identified as part of the Likely Significant Effect (LSE) screening provided in the HRA Screening Report (Sporad na Mara Limited, 2024) and the HRA Screening Opinion (MD-LOT, 2024).

1.1.1.2 This appendix should be read in conjunction with **Offshore RIAA Annex D.1: Individual Colony Apportionment (Breeding Season)** that accompanies this appendix, the **Offshore RIAA** and **Offshore RIAA Appendix A: Confirmed Screening Conclusions**. It should also be read in conjunction with the following chapters and appendices within the **Offshore Environmental Impact Assessment Report (EIAR)**:

- **Offshore EIAR Chapter 3: Project Description, Volume 1a,**
- **Offshore EIAR Chapter 14: Marine and Nearshore Ornithology, Volume 2a,**
- **Offshore EIAR Appendix 14.1: Ornithology Baseline Report, Volume 2c;**
- **Offshore EIAR Appendix 14.2: Displacement Report, Volume 2c;**
- **Offshore EIAR Annex 14.2.2: SeabORD Report, Volume 2c;**
- **Offshore EIAR Appendix 14.3: Collision Risk Modelling Report, Volume 2c;**
- **Offshore EIAR Appendix 14.4: Migratory Collision Risk Modelling Report, Volume 2c.**

1.1.1 OFFSHORE PROJECT BACKGROUND

1.1.1.1 Sporad na Mara Limited (hereafter referred to as 'the Applicant') is proposing to develop the Project. The Project is an offshore wind farm (OWF) that will consist of up to 60 fixed-bottom wind turbine generators (WTGs).

1.1.1.2 The Project will include both offshore and onshore infrastructure. The Offshore EIAR and Offshore RIAA supports the application for the offshore components of the Project as outlined in **Offshore EIAR Chapter 1: Introduction, Volume 1a**. The offshore components of the Project (the Offshore Project) include all infrastructure and activities located seaward of Mean High Water Springs (MHWS) within the Array Area and Offshore Cable Area of Search (OCAS) (see **Offshore EIAR Figure 1.2: Project Layout, Volume 1c**). Further detailed information is provided in **Offshore EIAR Chapter 3, Volume 1a**.

1.1.1.3 The Offshore Project is situated off the northwest coast of Isle of Lewis/*Eilean Leòdhais* and the Array Area is located approximately 5-13 km offshore and is approximately 161 km² in size. It will comprise WTGs, foundations, Offshore Cables, Offshore Substation Platform (OSP) (if required),

and Landfall. The Array Area combined with the OCAS is defined as the Offshore Project Boundary. The water depths across the Array Area range from 37 m-67 m with the southwest corner of the Array Area reaching 72 m. The proposed WTGs and fixed foundations will be located within a Turbine Area of approximately 140 km², within the Array Area.

1.2 PURPOSE OF THIS APPENDIX

1.2.1.1 This appendix sets out the approach to estimating apportioning weights for screened-in SPAs (**Offshore RIAA, Appendix A**) for the assessed seabird species (see **Offshore EIAR Appendix 14.2, Volume 2c**, and **Offshore EIAR Appendix 14.3, Volume 2c**). Apportioning for migratory seabirds and waterbirds is also presented, in line with NatureScot advice (email correspondence, 21 August 2025). For migratory species, apportioning is only undertaken where the migratory collision risk was estimated to be greater than 0 (see **Offshore EIAR Appendix 14.4, Volume 2c**).

1.2.1.2 This appendix describes the following:

- **Section 1 Introduction** introduces the project, summarises the purpose of this appendix, and provides background on the use of apportioning in the assessment process;
- **Section 2 Methodology** sets out the approach used for apportioning seabird impacts to SPAs and non-SPA colonies. This includes descriptions of the approach to both breeding and non-breeding seasons, as well as the treatment of immature birds, sabbatical adults, and migratory species;
- **Section 3 Results** presents the quantitative results of the apportioning calculations, summarising apportioning values for each SPA and non-SPA colonies for seabirds during both breeding and non-breeding seasons and also for migratory birds. Full apportioning details for all seabird breeding colonies (SPA and non-SPA) are presented in **Offshore RIAA, Annex D.1**;
- **Section 4 Discussion** describes the findings set out in Section 3 and discusses their implications and limitations;
- **Section 5 Glossary of Terms and Abbreviations** sets out the key terms and abbreviations introduced in this appendix;
- **Section 6 References** sets out the details of the reports, research papers and literature referred to in this appendix.

1.3 BACKGROUND

1.3.1.1 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 United Kingdom (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 SPAs, is a key element of the assessment of impact, and is necessary to inform the Habitats Regulations Appraisal (HRA).

- 1.3.1.2 To support this, NatureScot (2018) developed a theoretical framework to estimate the proportion of birds from SPA colonies that use proposed development areas during the breeding season. For the non-breeding period, the standard approach to apportioning is based on the methodology outlined in Furness (2015). These methods enable practitioners to calculate apportioning values, which are then used to distribute the potential impacts of a marine renewable project across multiple SPAs.
- 1.3.1.3 The resulting apportioning values are presented for each SPA and have been used in the **Offshore RIAA** to support the assessment of potential for an Adverse Effect on Integrity (AEI).

2 METHODOLOGY

2.1 APPROACH

- 2.1.1.1 Apportioning undertaken for the breeding season is based on the NatureScot ‘theoretical approach’ method for the breeding season (NatureScot, 2018).
- 2.1.1.2 Apportioning for the non-breeding period (i.e., post-breeding and pre-breeding seasons and in winter) generally utilises the Biologically Defined Minimum Population Scales (BDMPS) approach developed by Furness (2015). Seasonal definitions are set out in **Offshore EIAR Appendix 14.1, Volume 2c**. For guillemot *Uria aalge*, NatureScot (2023a) advises that the mean-maximum foraging range (MMFR)+ 1 standard deviation (SD) should be used instead to determine connectivity to SPAs.

2.2 IDENTIFICATION OF SEABIRD SPECIES

- 2.2.1.1 **Table 2-1** lists the SPAs and qualifying features for which a LSE has been identified, and for which apportioning values are therefore required to allocate potential Offshore Project impacts. The SPAs and qualifying features in **Table 2-1** are those originally identified in the HRA Screening Report (Sporad na Mara Limited, 2024), with subsequent revisions following the HRA Screening Opinion (MD-LOT, 2024). These represent the sites and features for which quantitative impact assessments are being undertaken (i.e. displacement and/or collision impacts). Further revisions were also made to reflect comments received within the Scoping Opinion. Details of how feedback from the Screening and Scoping Opinions informed changes to the SPAs and features screened in are provided in Table 8-1 of the **Offshore RIAA**.
- 2.2.1.2 The distances presented in **Table 2-1** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. This differs from the approach used in the Screening Report, where distances were measured from the centre of the Array Area (the original ‘Turbine Area’ before refinement). As a result, the values in **Table 2-1** vary from those previously reported.

Table 2-1: SPAs and associated qualifying features for which apportioning is required.

SPA	Distance from Turbine Area (km)	Qualifying Feature	Season of Relevance
Ailsa Craig SPA	400.4	Gannet <i>Morus bassanus</i>	All seasons
Calf of Eday SPA	246.4	Kittiwake <i>Rissa tridactyla</i>	All seasons
Canna and Sanday SPA	154.3	Kittiwake	All seasons
		Puffin <i>Fratercula arctica</i>	All seasons
Cape Wrath SPA	93.0	Kittiwake	All seasons
		Guillemot <i>Uria aalge</i>	All seasons

SPA	Distance from Turbine Area (km)	Qualifying Feature	Season of Relevance
		Razorbill <i>Alca torda</i>	All seasons
		Puffin	All seasons
Copinsay SPA	231.9	Kittiwake	All seasons
East Caithness Cliffs SPA	284.3	Kittiwake	All seasons
Fair Isle SPA	315.6	Gannet	All seasons
Flamborough and Filey Coast SPA	742.4	Gannet	Non-breeding seasons only
		Kittiwake	Non-breeding seasons only
Flannan Isles SPA	32.0	Kittiwake	All seasons
		Guillemot	All seasons
		Razorbill	All seasons
		Puffin	All seasons
Forth Islands SPA	578.4	Gannet	All seasons
Grassholm SPA	771.3	Gannet	Non-breeding seasons only
Handa SPA	82.2	Kittiwake	All seasons
		Guillemot	All seasons
		Razorbill	All seasons
Hermaness, Saxa Vord and Valla Field SPA	415.1	Gannet	All seasons
Lewis Peatlands SPA	2.4	Red-throated diver <i>Gavia stellata</i>	All seasons
Hoy SPA	189.1	Kittiwake	All seasons
		Puffin	All seasons
Marwick Head SPA	207.6	Kittiwake	All seasons
Mingulay and Berneray SPA	180.9	Kittiwake	All seasons
		Razorbill	Non-breeding seasons only
		Puffin	All seasons
North Caithness Cliffs SPA	161.2	Kittiwake	All seasons
		Puffin	All seasons
North Colonsay and Western Cliffs SPA	264.8	Kittiwake	All seasons
North Rona and Sula Sgeir SPA	71.9	Kittiwake	All seasons
		Gannet	All seasons
		Guillemot	All seasons
		Razorbill	All seasons
		Puffin	All seasons
Noss SPA	386.2	Gannet	All seasons
Rathlin Island SPA	356.6	Kittiwake	Non-breeding seasons only

SPA	Distance from Turbine Area (km)	Qualifying Feature	Season of Relevance
		Razorbill	Non-breeding seasons only
		Puffin	Non-breeding seasons only
Rousay SPA	222.6	Kittiwake	All seasons
Rum SPA	157.9	Kittiwake	All seasons
Shiant Isles SPA	104.8	Kittiwake	All seasons
		Razorbill	All seasons
		Puffin	All seasons
Skomer, Skokholm and the Seas off Pembrokeshire SPA	766.6	Razorbill	Non-breeding seasons only
		Puffin	Non-breeding seasons only
St Kilda SPA	102.9	Kittiwake	All seasons
		Gannet	All seasons
		Razorbill	All seasons
		Puffin	All seasons
Sule Skerry and Sule Stack SPA	140.6	Gannet	All seasons
		Guillemot	All seasons
		Puffin	All seasons
West Westray SPA	233.2	Kittiwake	All seasons

2.3 APPORTIONING OF SEABIRDS DURING THE BREEDING SEASON

2.3.1.1 In the breeding season, a population of birds in a given sea area, is likely to comprise of 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)). It is the populations of breeding adult birds that are the designated features within the SPAs considered. It is therefore necessary to estimate the proportion of the total number of birds potentially impacted by a project that may be breeding adults associated with each SPA.

2.3.2 BREEDING ADULT BIRDS

2.3.2.1 To identify those breeding colonies (both colonies within SPAs and non-SPA colonies) for which there may be connectivity between breeding birds and the Offshore Project, the recommended foraging range given by NatureScot (2023b) has been used. In most cases, this is the MMFR+ 1 SD as published by Woodward *et al.* (2019). However, alternative foraging range, often informed by site-specific information, are recommended for certain species or SPAs.

- 2.3.2.2 This applies, for example, to guillemot and razorbill, for which NatureScot advises use of a different foraging range under certain circumstances. For all Northern Isles SPAs, NatureScot recommends applying the MM foraging range +1 SD (153.7 km for guillemot and 164.4 km for razorbill). For SPAs located south of the Pentland Firth, the recommended values are based on the MMFR+1 SD, but excluding data from Fair Isle birds (95.2 km for guillemot and 122.2 km for razorbill) (NatureScot 2023b).
- 2.3.2.3 For gannet, site-specific maximum foraging ranges have also been applied, in line with NatureScot guidance (NatureScot 2023b). This reflects situations where the maximum distance recorded at certain sites exceeds the MMFR +1 SD, and where NatureScot therefore advises the use of the site-specific value.
- 2.3.2.4 For red-throated diver, NatureScot guidance (NatureScot 2023b) reports only the maximum/MM value. Accordingly, this value has been adopted for the assessment. However, refer to Section 3.6 for further detail on the foraging range for red-throated diver being increased, as requested by NatureScot.
- 2.3.2.5 The foraging ranges are presented in **Table 2-2**.

Table 2-2: Foraging range to identify connectivity in the breeding season (from NatureScot, 2023)

Species	Foraging Range (km)	Foraging Range Notes
Kittiwake	300.6	Mean- Maximum (MM)+1 SD
Guillemot	95.2 (all colonies other than Northern Isles)	MM+1 SD excluding data from Fair Isle
	153.7 (all Northern Isles colonies)	MM+1 SD including data from Fair Isle
Razorbill	122.2 (all colonies other than Northern Isles)	MM+1 SD excluding data from Fair Isle
	164.6 (all Northern Isles colonies)	MM+1 SD including data from Fair Isle
Puffin	265.4	MM+1 SD
Red-throated diver	9	Maximum/MM
Gannet	509.4 (all colonies other than those specified below)	MM+1 SD
	590.0 (Forth Islands SPA)	Site-specific max
	516.7 (Grassholm SPA)	Site-specific max
	709.0 (St Kilda SPA)	Site-specific max

- 2.3.2.6 Following pre-application engagement with NatureScot, the advice received stated that if the distance from the edge of the Turbine Area to the edge of the SPA boundary is within foraging range, then all colonies within that SPA should be considered to have potential connectivity with the Offshore Project, even though the actual colony itself may be beyond the recommended

foraging range from the Turbine Area (NatureScot, 2025. Email sent to The Applicant, 8 May). Colony locations are determined using the coordinates provided in the Seabirds Count downloadable dataset (Joint Nature Conservation Committee (JNCC), 2024).

2.3.2.7 The NatureScot advice received related specifically to SPA colonies. To ensure a precautionary and consistent approach, potential connectivity has also been assessed for non-SPA colonies following the same agreed approach. It would not be appropriate to apply connectivity rules to SPA colonies while excluding non-SPA colonies located closer to the Turbine Area. Therefore, connectivity to colonies was established by applying the following steps:

- All colonies where the at-sea distance from the edge of the Turbine Area to the colony is within the foraging range presented in **Table 2-2**;
- All colonies within SPAs where the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary is within the foraging range presented in **Table 2-2**;
- All non-SPA colonies where the at-sea distance from the edge of the Turbine Area to the colony is less than the greatest distance of any colony included as a result of the previous step.

2.3.2.8 Following identification of colonies with potential connectivity, 3 site-specific weighting factors have been applied to each colony:

- Colony size (with consistent count unit used between colonies for a species e.g., individuals, breeding pairs or apparently occupied sites);
- Distance of colony from the Turbine Area;
- Sea area (the area extent of the open sea within the foraging range of the relevant species).

2.3.2.9 Large colonies will contribute more individuals to the number of seabirds found within the Turbine Area, 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 directly from the recently published Seabirds Count (Burnell *et al.*, 2023). The Seabirds Count is the 4th UK breeding seabird census, following on from the Seabird 2,000 census (Mitchell *et al.*, 2004). The Seabirds Count comprehensively surveyed seabird colonies, with surveys undertaken 2015-2021. As such, the Seabirds Count data represent the best available data on breeding seabird colony sizes (Burnell *et al.*, 2023).

2.3.2.10 Weighting by distance from the colony has been calculated using the measured distance between the geometric centre of the Turbine Area to the colony, using a by-sea route, as recommended by NatureScot (2018). The location of colonies was based on the coordinates given in the Seabirds Count downloadable dataset (JNCC, 2024). As birds move further away from a colony, density will decrease by a factor proportional to $1/\text{distance}^2$ as area increases proportionally by πr^2 . For the purposes of this assessment, a weighting factor based on $1/\text{distance}^2$ has been used, as advised by NatureScot (2018).

2.3.2.11 The available sea area for foraging has been measured by plotting a circle (defined by the species-specific foraging range around the colony) in the statistical software R (R Core Team, 2025) and calculating the area of sea available to each seabird species. The fraction of the disc centred on the colony that is occupied by sea surface is then expressed as a decimal. As the density of birds is predicted to increase as the area of available foraging area decreases, this is used in the formula as 1/estimated area.

2.3.2.12 The 3 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:

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

2.3.2.13 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.

2.3.2.14 Where an SPA consists of multiple colonies, apportionment was carried out to each colony individually following the method described above. The total apportionment weight of the SPA population is then calculated as the sum of the weights of the individual colonies. The results presented in Section 3 are summarised for each SPA (e.g., the distance given is the average of the distance measured to each colony within the SPA); the full results including calculations for each individual colony are presented in **Offshore RIAA, Annex D.1**.

2.3.3 IMMATURE BIRDS

2.3.3.1 A major part of any seabird population comprises immature birds. This is especially relevant for many of the species considered in this appendix, with some species not breeding until they reach 6 or more years of age (for example puffin, as taken from Horswill and Robinson, 2015). 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.

2.3.3.2 To determine the proportion of immature birds, present within the Offshore Project in the breeding season, data from the site-specific Digital Aerial Surveys (DAS) have been analysed (**Table 2-3**). This approach can only be used for gannet and kittiwake as they are easily distinguishable between immature and adult individuals. Identifying the age class of birds from other species, such as auks, using DAS, is not feasible due to the similarity between immatures and adults. Only those birds assigned to an age class have been included in the calculation in **Table 2-3**. However, the number of birds for which an age class was not assigned is also provided. It should be noted that the results presented in **Table 2-3** are from the entire Offshore Ornithology Survey Area, consisting of

ScotWind N4 site plus a 10 km buffer (excluding land). Including results from the Offshore Ornithology Survey Area maximises the sample size and therefore the confidence of the calculation.

Table 2-3: Number of birds assigned to different age class categories during site-specific surveys of the Offshore Ornithology Survey Area

Species	Breeding Season Extent	Number of Birds for Which Age Was Not Identified (individuals)	Number of Adult-Type Birds (individuals)	Number of Juvenile Birds (individuals)	Number of Immature Birds (individuals)	Proportion of Juvenile Birds (%)	Proportion of Immature Birds (%)
Kittiwake	Mid-April - August	71	76	1	23	1.00	23.00
Gannet	March - September	6	984	2	52	0.19	5.20

2.3.3.3 For gannet, all immature age classes can be distinguished from adult type birds with a high degree of confidence from DAS, and therefore the proportions in **Table 2-3** are used without further adjustment.

2.3.3.4 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 1 year old kittiwakes can be easily identified due to differences in plumage, 2 and 3-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 Project.

2.3.3.5 To calculate an apportioning value for the breeding season in respect to the number of 2 and 3 year old kittiwakes at the Offshore Project, the analysis uses survival rates for immature kittiwake from Horswill and Robinson (2015) (**Table 2-4**). The apportioned values will likely remain an underestimate for the 2 and 3-year immatures as proportionately those cohorts show a much greater affinity for natal waters than 1-year birds.

Table 2-4: Estimated breeding season contribution of immature kittiwake predicted to be present at the Offshore Project

Analysis	Formula (Using the Parameters Identified as Part of Each Analysis Step)	Value
(a) Proportion of juveniles identified in DAS (Table 2-3) (%)	N/A	1.00
(b) Proportion of immatures identified in DAS (assumed to be 1 year old) (Table 2-3) (%)	N/A	23.00

Analysis	Formula (Using the Parameters Identified as Part of Each Analysis Step)	Value
(c) Survival rate immature age classes (Horswill and Robinson, 2015)	N/A	0.854
Proportion of kittiwake assigned to other immature age classes: (d) 2-year-old birds (%); (e) 3-year-old birds (%).	$d = b \times c$ $e = d \times c$	$d = 19.64$ $e = 16.77$
(f) Proportion of kittiwake assumed to be juvenile/immature (%)	$f = a + b + d + e$	$f = 60.42$
(g) Proportion of kittiwakes assumed to be adult (%)	$g = 100 - f$	$g = 39.58$

2.3.3.6 For other species, birds cannot be readily aged from DAS imagery. Therefore, the proportion of adults present at the Offshore Project in the breeding season is assumed to equal the proportion of adults within the population as a whole. The proportion of age classes is calculated from the demographic data in Horswill and Robinson (2015) assuming a stable age structure. This approach aligns with NatureScot guidance (NatureScot, 2018), which states that where birds cannot be aged in the field, published life tables may be used to estimate the expected proportion of adults within different age classes. The key values used for apportionment are presented in **Table 2-5**.

Table 2-5: Proportion of age classes of all species

Species	Source	Proportion in Age Class (%)						Total Juvenile/Immature	Adult
		0-1	1-2	2-3	3-4	4-5			
Kittiwake	Site-specific DAS (Table 2-4)	1.00	23.00	19.64	16.77	N/A	60.42	39.59	
Guillemot	Horswill and Robinson (2015)	15.3	8.4	6.5	5.8	5.3%	41.3	58.7	
Razorbill	Horswill and Robinson (2015)	15.5	9.9	6.4	5.9	N/A	37.7	62.3	
Puffin	Horswill and Robinson (2015)	15.5	11.3	8.2	6.0	4.6	45.6	54.4	
Red-throated diver	Furness (2015)	42.5 (sum of all juvenile/immature age classes)			N/A		42.5	57.5	

Species	Source	Proportion in Age Class (%)					Total Juvenile/Immature	Adult
		0-1	1-2	2-3	3-4	4-5		
Gannet	Site-specific DAS (Table 2-3)	0.19	5.20 (sum of all immature age classes)				5.39	94.61

2.3.3.7 In the non-breeding season, the proportion of adults within the population does not need to be calculated or specified separately, as it is already factored into the Furness (2015) data used (see Section 2.4).

2.3.4 SABBATICALS

2.3.4.1 During every breeding season, a proportion of adults skip breeding and take a 'sabbatical'. The inclusion of sabbatical birds within the birds apportioned to a colony would likely lead to an overestimate of the effects to these species/populations (Marine Scotland 2017a; 2017b). This is because estimates of breeding colony population sizes used within the RIAA, do not include these sabbatical birds.

2.3.4.2 It is not possible to separate non-breeding adult birds from those that are breeding in a given sea area, and therefore published estimates of sabbatical behaviour have been obtained (**Table 2-6**). For the RIAA, apportionment follows the incidence of sabbaticals recommended by Scottish Ministers for previous projects (Marine Scotland 2017a; 2017b, 2017c). For red-throated diver, as sabbatical rates were unavailable, on a precautionary basis no correction is made.

Table 2-6: Published estimates of incidence of sabbatical birds

Species	Incidence of Sabbatical Birds			
	Horswill and Robinson (2015)			Marine Scotland (2017a, b)
	Percentage of UK population	Data Quality	Data Representation	Percentage of UK Population (%)
Kittiwake	18.0-20.8	Intermediate	Poor	10
Guillemot	7.9	Good	Good	7
Razorbill	3.0	Intermediate	Good	7
Puffin	7.8	Intermediate	Good	7
Red-throated diver	N/A	N/A	N/A	N/A
Gannet	N/A	N/A	N/A	10

2.4 APPORTIONING OF POTENTIAL IMPACTS ON SEABIRDS DURING THE NON-BREEDING SEASON

2.4.1 ALL SEABIRD SPECIES (WITH THE EXCEPTION OF GUILLEMOT)

2.4.1.1 The calculation of apportioning values for non-breeding seasons (post-breeding, non-breeding, and/or pre-breeding, as relevant for each species) has followed the approach advised by NatureScot (2023a). The non-breeding seasons also includes the periods of migration which occur before and after the 'breeding season', for example the post-breeding season could also be termed the 'autumn migration' season. For species except for guillemot, the contribution of adult birds from an individual SPA, 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 SPA under consideration.

2.4.1.2 It should be noted that no updates have been made to the population data presented in Furness (2015), as selectively updating specific colonies would cause inconsistencies with the original dataset.

2.4.1.3 Impacts on SPA populations need to take into account the impact during the breeding season and non-breeding seasons (post-breeding, non-breeding, and/or pre-breeding, as relevant for each species) in line with NatureScot guidance (NatureScot, 2023a). However, not all SPAs are explicitly identified in Furness (2015). For any breeding SPA not included, the proportion of birds within the relevant BDMPS has been taken from the nearest named SPA in Furness (2015) and applied as a proxy, to represent that SPA in the non-breeding assessment. This approach ensures that all relevant SPAs are considered across both breeding and non-breeding periods, consistent with NatureScot's guidance.

2.4.2 GUILLEMOT

2.4.2.1 As set out in paragraph 2.4.1.1, guillemot is the only species for which NatureScot (2023a) advises an alternative approach to the use of the BDMPS approach (Furness, 2015) when determining which colony SPAs have connectivity with the Offshore Project during the non-breeding season. For guillemot, NatureScot (2023a) advise that "*the non-breeding season population comprises the breeding population found within the MMFR+1SD of the development + age classes*".

2.4.2.2 Therefore, in line with this guidance, the total non-breeding season population of guillemot is calculated as:

- The number of breeding adults associated with colonies within foraging range for connectivity, as identified in Section 2.3.2;
- Plus the number of associated juvenile/immature birds, based on the population age structure as set out in Section 2.3.3.

2.4.2.3 The apportionment of guillemot in the non-breeding season to a colony is then calculated as the number of breeding adults from that colony divided by the total non-breeding season population.

2.5 APPORTIONING FOR MIGRATORY BIRDS

- 2.5.1.1 For migratory bird apportioning, only those species with an estimated annual collision mortality greater than zero were taken forward for further assessment, in line with NatureScot advice (email correspondence, 21 August 2025). For species with an estimated annual collision mortality of zero (**Offshore EIAR Appendix 14.4, Volume 2c**), apportioning was not undertaken, as any apportioned impact would also equate to zero and therefore provide no meaningful contribution to the assessment.
- 2.5.1.2 For species meeting this criterion, updated population estimates from the Wetland Bird Survey (WeBS) Programme (Calbrade *et al.*, 2025) were used where available, based on the 5-year mean peak count (2019–2024). In some cases, WeBS reports counts for separate sectors located within the boundary of an SPA rather than providing a single combined total for the whole site. In such instances, the sector counts were added together to ensure that the updated SPA population was as representative as possible. For example, within the Ribble and Alt Estuaries SPA and Ramsar, WeBS provides separate counts for the Ribble Estuary and the Alt Estuary; these were therefore summed to produce a single updated population figure for the Ribble and Alt Estuaries SPA and Ramsar. Where updated counts were not available within WeBS for any screened-in SPA (**Offshore RIAA Appendix A**), the published citation population for each qualifying feature of the site was used instead. This approach is consistent with advice provided by NatureScot on the apportioning of migratory birds (email correspondence, 21 August 2025).
- 2.5.1.3 To calculate SPA apportioning weights, the SPA population (either updated WeBS data or citation value) was divided by the UK population as provided within Woodward *et al* (2023) (**Offshore EIAR Appendix 14.4, Volume 2c**). For example, if 500 birds were recorded at a given SPA, and the UK of 347,000 for the species in question, then 0.144% of the total estimated collisions would be assigned to that SPA. This method was applied consistently across all screened-in qualifying features and protected sites.
- 2.5.1.4 While this approach is precautionary and not necessarily representative of the precise distribution of birds across the UK population, this method provides a transparent and systematic means of linking collision estimates to site-level impacts.

3 RESULTS

3.1 OVERVIEW

3.1.1.1 The results of the apportioning exercise are presented in Sections 3.2 to 3.6. This includes summary weights for non-SPA colonies, with full details for all colonies (SPA and non-SPA) presented in **Offshore RIAA, Annex D.1**.

3.1.1.2 The proportions, weights and apportioning values in the tables in Sections 3.2 to 3.6 are values that are scored out of one (i.e. 1.0000 equates to 100%, 0.1000 equates to 10%, and 0.0100 equates to 1%).

3.2 KITTIWAKE

3.2.1.1 Apportioning values in the breeding season for all kittiwake colonies within foraging range of the Turbine Area is presented in **Table 3-1**. Apportioning values for use in the post-breeding and pre-breeding seasons are presented in **Table 3-2**.

3.2.1.2 The distances presented in **Table 3-1** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. Where an SPA contains multiple colonies, the value provided is the average distance. Distance to each individual colony is provided in **Offshore RIAA, Annex D.1**.

Table 3-1: Apportioning values for kittiwake in the breeding season for SPAs within foraging range

SPA	Colony Count (AON ¹) (Burnell <i>et al.</i> , 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
Calf of Eday SPA	336	259.2	0.862	0.0016
Canna and Sanday SPA	1,421	168.3	0.691	0.0203
Cape Wrath SPA	3,622	111.3	0.807	0.0999
Copinsay SPA	955	247.4	0.837	0.0052
East Caithness Cliffs SPA	24,479	273.7	0.779	0.1174
Flannan Isles SPA	825	52.0	0.853	0.0996
Handa SPA	3,749	95.1	0.798	0.1450
Hoy SPA	266	203.8	0.825	0.0022
Marwick Head SPA	906	217.6	0.843	0.0063
Mingulay and Berneray SPA	2,088	198.5	0.718	0.0207

¹ AON: Apparently Occupied Nests

SPA	Colony Count (AON¹) (Burnell <i>et al.</i>, 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
North Caithness Cliffs SPA	5,571	196.3	0.808	0.0535
North Colonsay and Western Cliffs SPA	3,347	275.5	0.587	0.0210
North Rona and Sula Sgeir SPA	712	92.6	0.858	0.0265
Rousay SPA	330	238.2	0.852	0.0019
Rum SPA	700	180.3	0.682	0.0088
Shiant Isles SPA	1,075	102.6	0.785	0.0367
St Kilda SPA	420	129.3	0.878	0.0081
West Westray SPA	2,755	245.7	0.863	0.0148
Non-SPA Colonies	5,439	N/A	N/A	0.3104

Table 3-2: Post-breeding and pre-breeding season apportioning values for kittiwake

SPA	Post-breeding season			Pre-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number of Individuals)
Calf of Eday SPA	UK Western waters plus Channel (911,586)	299	0.0003	UK Western waters plus Channel (691,526)	448	0.0006
Canna and Sanday SPA		984	0.0011		1,312	0.0019
Cape Wrath SPA		12,413	0.0136		16,550	0.0239
Copinsay SPA		266	0.0003		400	0.0006
East Caithness Cliffs SPA		16,164	0.0177		24,246	0.0351
Flamborough and Filey Coast SPA		15,047	0.0165		22,570	0.0326
Flannan Isles SPA		1,670	0.0018		2,227	0.0032
Handa SPA		2,246	0.0025		2,995	0.0043
Hoy SPA		159	0.0002		238	0.0003
Marwick Head SPA		210	0.0002		316	0.0005
Mingulay and Berneray SPA		2,674	0.0029		3,565	0.0032
North Caithness Cliffs SPA		4,060	0.0045		6,090	0.0088
North Colonsay and Western Cliffs SPA		6,676	0.0073		8,901	0.0129
North Rona and Sula Sgeir SPA		1,504	0.0016		2,005	0.0029
Rathlin Island SPA	9,506	0.0104	12,675	0.0183		

SPA	Post-breeding season			Pre-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number of Individuals)
Rousay SPA		706	0.0008		1,058	0.0015
Rum SPA		946	0.0010		1,261	0.0018
Shiant Isles SPA		659	0.0007		878	0.0013
St Kilda SPA		1,148	0.0013		1,531	0.0022
West Westray SPA		4,822	0.0053		7,233	0.0105

3.3 GUILLEMOT

3.3.1.1 Apportioning values in the breeding season for all guillemot colonies within foraging range of the Turbine Area is presented in **Table 3-3**. The calculation to derive the regional population in the non-breeding season is presented in **Table 3-4**. Apportioning values for use in the non-breeding seasons are presented in **Table 3-5**.

3.3.1.2 The distances presented in **Table 3-3** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. Where an SPA contains multiple colonies, the value provided is the average distance. Distance to each individual colony is provided in **Offshore RIAA, Annex D.1**.

Table 3-3: Apportioning values for guillemot in the breeding season for SPAs within foraging range.

SPA	Colony Count (IND ²) (Burnell <i>et al.</i> , 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
Cape Wrath SPA	38,109	111.1	0.693	0.2311
Flannan Isles SPA	5,632	52.0	0.920	0.1198
Handa SPA	54,664	95.1	0.607	0.5221
North Rona and Sula Sgeir SPA	7,727	92.6	0.893	0.0570
Sule Skerry and Sule Stack SPA	9,000	162.4	0.854	0.0209
Non-SPA Colonies	4,352	N/A	N/A	0.0491

Table 3-4: Calculation of non-breeding season regional population for guillemot

Population Component	Source/Method	Value
Breeding individuals counted at the colony	Burnell <i>et al.</i> (2023) for colonies within foraging range	119,484
Breeding adults	Breeding individuals counted at the colony multiplied by 1.34 (Walsh <i>et al.</i> , 1995)	160,109
Juveniles/Immatures	Using age structure of 58.7% adults within the population (Table 2-5)	112,649
Total	Sum of breeding adults and juveniles/immatures	272,757

² IND: Individuals Counted at the Colony

Table 3-5: Non-breeding season apportioning values for guillemot

SPA	Non-breeding season		
	Regional Population (Number of Individuals)	SPA Population within Region (Number of Individuals)	Apportioning Value
Cape Wrath SPA	Colonies in foraging range plus immatures (272,757)	51,066	0.1872
Flannan Isles SPA		7,547	0.0277
Handa SPA		73,250	0.2686
North Rona and Sula Sgeir SPA		10,354	0.0380
Sule Skerry and Sule Stack SPA		12,060	0.0442

3.4 RAZORBILL

3.4.1.1 Apportioning values in the breeding season for all razorbill colonies within foraging range of the Turbine Area is presented in **Table 3-6**. Apportioning values for use in the post-breeding, winter, and pre-breeding seasons are presented in. It should be noted that following Furness (2015) the apportioning in the post-breeding season and pre-breeding season are identical; they are presented separately in **Table 3-7** for clarity.

3.4.1.2 The distances presented in **Table 3-6** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. Where an SPA contains multiple colonies, the value provided is the average distance. Distance to each individual colony is provided in **Offshore RIAA, Annex D.1**.

Table 3-6: Apportioning values for razorbill in the breeding season for SPAs within foraging range.

SPA	Colony Count (IND) (Burnell <i>et al.</i> , 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
Cape Wrath SPA	3,246	111.3	0.713	0.0943
Flannan Isles SPA	1,143	52.0	0.932	0.1190
Handa SPA	8,207	95.1	0.645	0.3663
North Rona and Sula Sgeir SPA	396	92.6	0.880	0.0127
Shiant Isles SPA	8,029	102.6	0.690	0.2912
St Kilda SPA	820	129.3	0.961	0.0132
Non-SPA Colonies	1,836	N/A	N/A	0.1033

Table 3-7: Post-breeding, winter and pre-breeding season apportioning values for razorbill

SPA	Post-breeding season			Winter season			Pre-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number. of Individuals)
Cape Wrath SPA	UK Western Waters (606,914)	4,096	0.0067	UK Western Waters (341,422)	1,672	0.0049	UK Western Waters (606,914)	4,096	0.0067
Flannan Isles SPA		2,060	0.0034		841	0.0025		2,060	0.0034
Handa SPA		10,123	0.0167		4,132	0.0121		10,123	0.0167
Mingulay and Berneray SPA		19,818	0.0327		8,089	0.0237		19,818	0.0327
North Rona and Sula Sgeir SPA		2,134	0.0035		871	0.0026		2,134	0.0035
Rathlin Island SPA		30,170	0.0497		12,314	0.0361		30,170	0.0497
Shiant Isles SPA		8,326	0.0137		3,398	0.0100		8,326	0.0137
Skomer, Skokholm, and the Seas Off Pembrokeshire SPA		11,762	0.0194		3,601	0.0105		11,762	0.0194
St Kilda SPA		3,332	0.0055		1,360	0.0040		3,332	0.0055

3.5 PUFFIN

3.5.1.1 Apportioning values in the breeding season for all puffin colonies within foraging range of the Turbine Area is presented in **Table 3-8**. Apportioning values for use in the non-breeding seasons are presented in **Table 3-9**.

3.5.1.2 The distances presented in **Table 3-8** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. Where an SPA contains multiple colonies, the value provided is the average distance. Distance to each individual colony is provided in **Offshore RIAA, Annex D.1**.

Table 3-8: Apportioning values for puffin in the breeding season for SPAs within foraging range.

SPA	Colony Count (IND) (Burnell <i>et al.</i> , 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
Canna and Sanday SPA	4,963	168.3	0.672	0.0064
Cape Wrath SPA	2,244	110.4	0.783	0.0057
Flannan Isles SPA	49,472	51.8	0.857	0.5361
Hoy SPA	430	208.8	0.808	0.0003
Mingulay and Berneray SPA	2,321	198.5	0.735	0.0020
North Caithness Cliffs SPA	3,039	194.6	0.783	0.0027
North Rona and Sula Sgeir SPA	3,301	92.6	0.865	0.0097
Shiant Isles SPA	64,695	102.4	0.754	0.2026
St Kilda SPA	98,793	129.3	0.892	0.1675
Sule Skerry and Sule Stack SPA	47,742	162.4	0.826	0.0539
Non-SPA Colonies	15,759	N/A	N/A	0.0132

Table 3-9: Non-breeding season apportioning values for puffin

SPA	Non-breeding season		
	BDMPs Population (Number of Individuals)	SPA Population within Region (Number of Individuals)	Apportioning Value
Canna and Sanday SPA	UK Western Waters (304,557)	340	0.0011
Cape Wrath SPA		577	0.0019
Flannan Isles SPA		5,616	0.0184
Hoy SPA		560	0.0018
Mingulay and Berneray SPA		1,125	0.0037

SPA	Non-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within Region (Number of Individuals)	Apportioning Value
North Caithness Cliffs SPA		156	0.0005
North Rona and Sula Sgeir SPA		1,959	0.0064
Rathlin Island SPA		250	0.0008
Shiant Isles SPA		23,461	0.0770
Skomer, Skokholm and the Seas off Pembrokeshire SPA		8,681	0.0285
St Kilda SPA		51,215	0.1682
Sule Skerry and Sule Stack SPA		21,410	0.0703

3.6 RED-THROATED DIVER

- 3.6.1.1 For red-throated diver, the only SPA screened in (Lewis Peatlands SPA; **Table 2-1**) is 9.8 km from the Turbine Area (**Table 2-1**), which is beyond the recommended foraging range of 9.0 km (**Table 2-2**). However, in pre-application consultation, NatureScot advised (by email to the Applicant; 3 April 2025) to refer to separate guidance on assessing connectivity with SPAs (Scottish Natural Heritage, 2016), which states for red-throated diver foraging ranges "*regular flights of 11-13.5 km recorded on Western Isles*".
- 3.6.1.2 It is known that red-throated diver does breed on Harris & Lewis outside of SPAs, with Dillon *et al.* (2006) estimating 78 breeding pairs within Lewis Peatlands SPA, 16 breeding pairs within Mointeach Scadabhaigh SPA, and 299 breeding pairs for the whole of the Outer Hebrides/*Na h-Eileanan Siar*. However, the exact location of breeding lochs is not disclosed, and furthermore the survey was carried out via sampling a subset of suitable lochs, such that many lochs that could potentially support breeding red-throated diver were not surveyed. As such, it is impossible to estimate how many non-SPA red-throated divers are present within foraging range of the Turbine Area.
- 3.6.1.3 On a precautionary basis, the apportioning value within the breeding season for red-throated diver has been set at 1.000, thus assuming that all breeding impacts are attributed to the Lewis Peatlands SPA.
- 3.6.1.4 Apportioning values for use in the post-breeding, winter and pre-breeding seasons are presented in **Table 3-10**.

Table 3-10: Post-breeding, winter and pre-breeding season apportioning values for red-throated diver

SPA	Post-breeding season			Winter season			Pre-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number of Individuals)	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number of Individuals)
Lewis Peatlands SPA	4,373	152	0.0348	861	64	0.0743	4,373	152	0.0348

3.7 GANNET

3.7.1.1 Apportioning values in the breeding season for all gannet colonies within foraging range of the Turbine Area is presented in **Table 3-11**. Apportioning values for use in the post-breeding and pre-breeding seasons are presented in **Table 3-12**.

3.7.1.2 The distances presented in **Table 3-11** have been measured as the at-sea distance from the edge of the Turbine Area to the edge of the SPA boundary. Where an SPA contains multiple colonies, the value provided is the average distance. Distance to each individual colony is provided in **Offshore RIAA, Annex D.1**.

Table 3-11: Apportioning values for gannet in the breeding season for SPAs within foraging range.

SPA	Colony Count (AON) (Burnell <i>et al.</i> , 2023)	Distance (km)	Proportion of Foraging Range at Sea	Apportioning Value
Ailsa Craig SPA	33,226	407.8	0.661	0.0298
Fair Isle SPA	4,971	332.0	0.856	0.0052
Forth Islands SPA	75,259	543.0	0.736	0.0341
Hermaness, Saxa Vord and Valla Field SPA	29,562	433.8	0.864	0.0179
North Rona and Sula Sgeir SPA	12,271	86.2	0.885	0.1835
Noss SPA	13,765	399.7	0.852	0.0100
St Kilda SPA	60,290	123.3	0.860	0.4543
Sule Skerry and Sule Stack SPA	9,065	158.2	0.883	0.0405
Non-SPA Colonies	16,353	N/A	N/A	0.2247

Table 3-12: Post-breeding and pre-breeding season apportioning values for gannet

SPA	Post-breeding season			Pre-breeding season		
	BDMPS Population (Number of Individuals)	SPA Population within BDMPS (Number of Individuals)	Apportioning Value	BDMPS Population (Number of Individuals)	SPA Population within BDMPS	BDMPS Population (Number of Individuals)
Ailsa Craig SPA	UK Western Waters (545,954)	54,260	0.0994	UK Western Waters (661,888)	54,260	0.0820
Fair Isle SPA		1,570	0.0029		2,354	0.0036
Flamborough and Filey Coast SPA		0	0.0000		6,637	0.0100
Forth Islands SPA		0	0.0000		33,289	0.0503
Grassholm SPA		78,584	0.1439		78,584	0.1187
Hermaness, Saxa Vord and Valla Field SPA		9,741	0.0178		14,612	0.0221
North Rona and Sula Sgeir SPA		16,605	0.0304		18,450	0.0279
Noss SPA		3,907	0.0072		5,860	0.0089
St Kilda SPA		107,320	0.1966		119,244	0.1802
Sule Skerry and Sule Stack SPA		8,415	0.0154		9,350	0.0141

3.8 MIGRATORY BIRDS

- 3.8.1.1 Apportioning values for migratory species are presented in **Table 3-13**. A single apportioning value is calculated for each screened-in SPA and species, reflecting the proportion of the UK migratory population attributed to that site. In line with NatureScot advice (email correspondence, 21 August 2025), only those species with an estimated annual collision mortality greater than zero were taken forward for assessment; consequently, only the relevant SPAs and species are presented in **Table 3-13**.
- 3.8.1.2 Within **Table 3-13**, the UK population figures are taken from Woodward *et al.* (2023), which in turn draws on the estimates presented in Woodward *et al.* (2020). It should be noted that a larger number of birds are considered within **Offshore EIAR Appendix 14.4, Volume 2c** as more birds migrate through UK waters than are included within the UK population estimates (from Woodward *et al.*, 2023). This will lead to a greater impact on individual SPAs than what may occur, however this is seen as a precautionary approach. The ability to calculate if a migrating bird is associated with a specific SPA is not possible, therefore knowing which birds move through UK waters and continue to other countries is also not practical and therefore this approach has been taken to apportion the whole mCRM impact to UK SPAs following NatureScot's advice (see paragraph 2.5.1.3).

Table 3-13: Apportioning values for migratory birds for screened in SPAs

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Abberton Reservoir SPA and Ramsar	Tufted Duck	4,672	WeBS	140,000	0.0334
	Wigeon	1,663	WeBS	450,000	0.0037
Alde-Ore Estuary SPA and Ramsar	Redshank	2,329	WeBS	100,000	0.0233
Antrim Hills SPA	Merlin	16	Citation	2,300	0.0070
Bae Caerfyrddin / Carmarthen Bay SPA	Common Scoter	1,150	WeBS	135,000	0.0085
Belfast Lough SPA and Ramsar	Redshank	1,003	WeBS	100,000	0.0100
Benfleet and Southend Marshes SPA and Ramsar	Ringed Plover	359	Citation	42,500	0.0084
	Dunlin	11372	Citation	350,000	0.0325
	Knot	8,850	Citation	265,000	0.0334
Berwyn SPA	Merlin	18	2008 management plan	2,300	0.0078
Black Cart SPA	Whooper Swan	20	WeBS	25,800	0.0008
Blackwater Estuary (Mid-Essex Coast Phase 4) SPA and Ramsar	Dunlin	16,306	WeBS	350,000	0.0466
	Ringed Plover	315	WeBS	42,500	0.0074

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Bluemull and Colgrave Sounds SPA	Red-throated Diver	388	Citation	21,500	0.0180
Bowland Fells SPA	Merlin	42	Citation	2,300	0.0183
Breydon Water SPA and Ramsar	Golden Plover	21,871	WeBS	410,000	0.0533
Bridgend Flats Islay SPA and Ramsar	Greenland Barnacle Goose	6700	Citation	56,000	0.1196
Broadland SPA and Ramsar	Whooper Swan	100	Citation	25,800	0.0039
	Wigeon	10,071	Citation	450,000	0.0224
Burry Inlet SPA and Ramsar	Pintail	1,445	WeBS	20,000	0.0723
	Shelduck	837	WeBS	51,000	0.0164
	Oystercatcher	10,074	WeBS	305,000	0.0330
	Turnstone	46	WeBS	43,000	0.0011
	Dunlin	2,025	WeBS	350,000	0.0058
	Knot	2,326	WeBS	265,000	0.0088
	Redshank	756	WeBS	100,000	0.0076
	Wigeon	833	WeBS	450,000	0.0019

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Cairngorms SPA	Merlin	28	Citation	2,300	0.0122
Caithness and Sutherland Peatlands SPA and Ramsar	Short-eared Owl	60	Citation	4,400	0.0136
	Dunlin	3720	Citation	350,000	0.0106
	Golden Plover	2128	Citation	410,000	0.0052
	Merlin	108	Citation	2,300	0.0470
	Red-throated Diver	92	Citation	21,500	0.0043
	Wigeon	86	Citation	450,000	0.0002
	Common Scoter	42	Citation	135,000	0.0003
Caithness Lochs SPA and Ramsar	Greenland White-fronted Goose	102	WeBS	11,500	0.0089
	Icelandic Greylag Goose	944	WeBS	60,000	0.0157
	Whooper Swan	261	WeBS	25,800	0.0101
Cameron Reservoir SPA and Ramsar	Pink-footed Goose	3,621	WeBS	510,000	0.0071
Carlingford Lough SPA and Ramsar	Canadian Light-Bellied Brent Goose	581	WeBS	31,000	0.0187

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Castle Loch Lochmaben SPA and Ramsar	Pink-footed Goose	0	WeBS	510,000	0.0000
Chesil Beach and The Fleet SPA and Ramsar	Wigeon	10,000	Citation	450,000	0.0222
Chichester and Langstone Harbours SPA and Ramsar	Red-breasted Merganser	332	WeBS	11,000	0.0302
	Sanderling	312	WeBS	20,500	0.0152
	Dunlin	24,141	WeBS	350,000	0.0690
	Pintail	497	WeBS	20,000	0.0249
	Redshank	2,457	WeBS	100,000	0.0246
	Ringed Plover	799	WeBS	42,500	0.0188
	Shelduck	792	WeBS	51,000	0.0155
	Turnstone	506	WeBS	43,000	0.0118
	Wigeon	4,588	WeBS	450,000	0.0102
Coll and Tiree SPA	Great Northern Diver	452	Citation	4,400	0.1027
Coll SPA and Ramsar	Greenland Barnacle Goose	500	Citation	56,000	0.0089

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Greenland White-fronted Goose	350	Citation	11,500	0.0304
Colne Estuary (Mid-Essex Coast Phase 2) SPA and Ramsar	Redshank	1,312	WeBS	100,000	0.0131
	Ringed Plover	144	WeBS	42,500	0.0034
Cromarty Firth SPA and Ramsar	Scaup	531	WeBS	6,400	0.0830
	Dunlin	2,011	WeBS	350,000	0.0057
	Icelandic Greylag Goose	721	WeBS	60,000	0.0120
	Oystercatcher	2,792	WeBS	305,000	0.0092
	Pintail	254	WeBS	20,000	0.0127
	Red-breasted Merganser	483	WeBS	11,000	0.0439
	Redshank	1,494	WeBS	100,000	0.0149
	Whooper Swan	26	WeBS	25,800	0.0010
	Wigeon	9,555	WeBS	450,000	0.0212
Dengie (Mid-Essex Coast Phase 1) SPA and Ramsar	Knot	12,003	WeBS	265,000	0.0453

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Din Moss - Hoselaw Loch SPA and Ramsar	Icelandic Greylag Goose	109	WeBS	60,000	0.0018
	Pink-footed Goose	0	WeBS	510,000	0.0000
Dornoch Firth and Loch Fleet SPA and Ramsar	Dunlin	1,126	WeBS	350,000	0.0032
	Icelandic Greylag Goose	320	WeBS	60,000	0.0053
	Oystercatcher	1,031	WeBS	305,000	0.0034
	Redshank	592	WeBS	100,000	0.0059
	Scaup	30	WeBS	6,400	0.0047
	Wigeon	9,544	WeBS	450,000	0.0212
Dorset Heathlands SPA and Ramsar	Merlin	15	Citation	2,300	0.0065
Drumochter Hills SPA	Merlin	14	Citation	2,300	0.0061
Dungeness Romney Marsh and Rye Bay SPA and Ramsar	Golden Plover	4,184	WeBS	410,000	0.0102
Dyfi Estuary / Aber Dyfi SPA	Greenland White-fronted Goose	16	WeBS	11,500	0.0014
	Slavonian Grebe	54	Citation	995	0.0543

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
East Mainland Coast Shetland SPA	Great Northern Diver	182	Citation	4,400	0.0414
	Red-throated Diver	410	Citation	21,500	0.0191
East Sanday Coast SPA and Ramsar	Purple Sandpiper	830	Citation	9,900	0.0838
	Turnstone	1400	Citation	43,000	0.0326
Eilean na Muice Duibhe (Duich Moss) SPA and Ramsar	Greenland White-fronted Goose	600	Citation	11,500	0.0522
Elenydd – Mallaen SPA	Merlin	14	Citation	2,300	0.0061
Exe Estuary SPA and Ramsar	Dunlin	2,594	WeBS	350,000	0.0074
	Oystercatcher	1,830	WeBS	305,000	0.0060
	Slavonian Grebe	0	WeBS	995	0.0000
Fala Flow SPA and Ramsar	Pink-footed Goose	809	WeBS	510,000	0.0016
Falmouth Bay to St Austell Bay SPA	Great Northern Diver	74	Citation	4,400	0.0168
	Slavonian Grebe	15	Citation	995	0.0151
Fetlar SPA	Whimbrel	130	Citation	3,840	0.0339
	Dunlin	180	Citation	350,000	0.0005

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Firth of Forth SPA and Ramsar	Dunlin	9,514	Citation	350,000	0.0272
	Golden Plover	2,949	Citation	410,000	0.0072
	Knot	9,258	Citation	265,000	0.0349
	Oystercatcher	7,846	Citation	305,000	0.0257
	Pink-footed Goose	10,852	Citation	510,000	0.0213
	Red-breasted Merganser	670	Citation	11,000	0.0609
	Redshank	4,341	Citation	100,000	0.0434
	Red-throated Diver	90	Citation	21,500	0.0042
	Ringed Plover	328	Citation	42,500	0.0077
	Scaup	437	Citation	6,400	0.0683
	Shelduck	4,509	Citation	51,000	0.0884
	Slavonian Grebe	84	Citation	995	0.0844
	Turnstone	860	Citation	43,000	0.0200
	Wigeon	2,139	Citation	450,000	0.0048
Common Scoter	2,880	Citation	135,000	0.0213	

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Firth of Tay and Eden Estuary SPA and Ramsar	Dunlin	1,352	WeBS	350,000	0.0039
	Icelandic Greylag Goose	11	WeBS	60,000	0.0002
	Oystercatcher	2,328	WeBS	305,000	0.0076
	Pink-footed Goose	3,193	WeBS	510,000	0.0063
	Red-breasted Merganser	26	WeBS	11,000	0.0024
	Redshank	915	WeBS	100,000	0.0092
	Sanderling	117	WeBS	20,500	0.0057
	Common Scoter	93	WeBS	135,000	0.0007
Forest of Clunie SPA	Merlin	24	Citation	2,300	0.0104
	Short-eared Owl	30	Citation	4,400	0.0068
Foula SPA	Red-throated Diver	22	Citation	21,500	0.0010
Foulness (Mid-Essex Coast Phase 5) SPA and Ramsar	Knot	22,151	Citation	265,000	0.0836
	Oystercatcher	9,805	Citation	305,000	0.0321
	Redshank	1,540	Citation	100,000	0.0154
	Ringed Plover	180	Citation	42,500	0.0042

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Gibraltar Point SPA and Ramsar	Sanderling	1140	Citation	20,500	0.0556
Gladhouse Reservoir SPA and Ramsar	Pink-footed Goose	2,043	WeBS	510,000	0.0040
Greater Wash SPA	Red-throated Diver	1,407	Citation	21,500	0.0654
	Common Scoter	3,449	Citation	135,000	0.0255
Greenlaw Moor SPA and Ramsar	Pink-footed Goose	14,200	Citation	510,000	0.0278
Gruinart Flats Islay SPA and Ramsar	Greenland Barnacle Goose	0	WeBS	56,000	0.0000
	Greenland White-fronted Goose	21	WeBS	11,500	0.0018
Hamford Water SPA and Ramsar	Redshank	1,952	WeBS	100,000	0.0195
	Ringed Plover	219	WeBS	42,500	0.0052
	Shelduck	1,017	WeBS	51,000	0.0199
Hermaness, Saxa Vord and Valla Field SPA	Red-throated Diver	52	Citation	21,500	0.0024
Holburn Lake and Moss SPA and Ramsar	Icelandic Greylag Goose	158	WeBS	60,000	0.0026

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Hoy SPA	Red-throated Diver	116	Citation	21,500	0.0054
Humber Estuary SPA and Ramsar	Dunlin	22,346	WeBS	350,000	0.0638
	Golden Plover	21,623	WeBS	410,000	0.0527
	Knot	20,411	WeBS	265,000	0.0770
	Oystercatcher	7,218	WeBS	305,000	0.0237
	Redshank	2,668	WeBS	100,000	0.0267
	Ringed Plover	1,508	WeBS	42,500	0.0355
	Sanderling	812	WeBS	20,500	0.0396
	Scaup	2	WeBS	6,400	0.0003
	Shelduck	11,398	WeBS	51,000	0.2235
	Turnstone	276	WeBS	43,000	0.0064
	Whimbrel	38	WeBS	3,840	0.0099
	Wigeon	6,452	WeBS	450,000	0.0143
Inner Clyde Estuary SPA and Ramsar	Redshank	1,094	WeBS	100,000	0.0109
	Icelandic Greylag Goose	441	WeBS	60,000	0.0074

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Inner Moray Firth SPA and Ramsar	Oystercatcher	3,943	WeBS	305,000	0.0129
	Red-breasted Merganser	129	WeBS	11,000	0.0117
	Redshank	2,206	WeBS	100,000	0.0221
	Scaup	170	WeBS	6,400	0.0266
	Wigeon	5,763	WeBS	450,000	0.0128
Killough Bay SPA and Ramsar	Canadian Light-Bellied Brent Goose	2,300	Citation	11,500	0.2000
Laggan Islay SPA	Greenland Barnacle Goose	1800	Citation	56,000	0.0321
	Greenland White-fronted Goose	300	Citation	11,500	0.0261
Larne Lough SPA and Ramsar	Canadian Light-Bellied Brent Goose	176	WeBS	31,000	0.0057
Lewis Peatlands SPA and Ramsar	Dunlin	6800	Citation	350,000	0.0194
	Golden Plover	3200	Citation	410,000	0.0078
	Merlin	40	Citation	2,300	0.0174
	Red-throated Diver	160	Citation	21,500	0.0074

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Lindisfarne SPA and Ramsar	Dunlin	4,959	WeBS	350,000	0.0142
	Golden Plover	3,998	WeBS	410,000	0.0098
	Icelandic Greylag Goose	0	WeBS	60,000	0.0000
	Red-breasted Merganser	47	WeBS	11,000	0.0043
	Redshank	890	WeBS	100,000	0.0089
	Ringed Plover	1,314	WeBS	42,500	0.0309
	Sanderling	157	WeBS	20,500	0.0077
	Shelduck	1,960	WeBS	51,000	0.0384
	Whooper Swan	49	WeBS	25,800	0.0019
	Wigeon	22,638	WeBS	450,000	0.0503
	Common Scoter	470	WeBS	135,000	0.0035
Liverpool Bay / Bae Lerpwl SPA	Red-throated Diver	1171	Citation	21,500	0.0545
	Common Scoter	56,679	Citation	135,000	0.4198
Loch Ashie SPA	Slavonian Grebe	60	Citation	995	0.0603
	Icelandic Greylag Goose	1,299	WeBS	60,000	0.0217

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Loch Eye SPA and Ramsar	Whooper Swan	600	WeBS	25,800	0.0233
Loch Flemington SPA	Slavonian Grebe	0	WeBS	995	0.0000
Loch Ken and River Dee Marshes SPA and Ramsar	Greenland White-fronted Goose	96	WeBS	11,500	0.0083
	Icelandic Greylag Goose	229	WeBS	60,000	0.0038
Loch Knockie and Nearby Lochs SPA	Slavonian Grebe	12	Citation	995	0.0121
Loch Leven SPA and Ramsar	Pink-footed Goose	10,985	WeBS	510,000	0.0215
	Tufted Duck	8,558	WeBS	140,000	0.0611
	Whooper Swan	497	WeBS	25,800	0.0193
Loch Lomond SPA and Ramsar	Greenland White-fronted Goose	113	WeBS	11,500	0.0098
Loch of Inch and Torrs Warren SPA and Ramsar	Greenland White-fronted Goose	534	Citation	11,500	0.0464
Loch of Kinnordy SPA and Ramsar	Icelandic Greylag Goose	910	Citation	60,000	0.0152
	Pink-footed Goose	3,960	Citation	510,000	0.0078

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Loch of Lintrathen SPA and Ramsar	Icelandic Greylag Goose	155	WeBS	60,000	0.0026
Loch of Skene SPA and Ramsar	Icelandic Greylag Goose	45	WeBS	60,000	0.0008
Loch of Strathbeg SPA and Ramsar	Icelandic Greylag Goose	91	WeBS	60,000	0.0015
	Pink-footed Goose	10,454	WeBS	510,000	0.0205
	Whooper Swan	964	WeBS	25,800	0.0374
Loch Ruthven SPA and Ramsar	Slavonian Grebe	28	Citation	995	0.0281
Loch Spynie SPA and Ramsar	Icelandic Greylag Goose	754	WeBS	60,000	0.0126
Loch Vaa SPA	Slavonian Grebe	14	Citation	995	0.0141
Lochs of Spiggie and Brow SPA	Whooper Swan	53	WeBS	25,800	0.0021
Lough Foyle SPA and Ramsar	Whooper Swan	1,130	WeBS	25,800	0.0438
	Canadian Light-Bellied Brent Goose	2,707	WeBS	31,000	0.0873
	Tufted Duck	23476	Citation	140,000	0.1677

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Lough Neagh and Lough Beg SPA and Ramsar	Whooper Swan	923	Citation	25,800	0.0358
Lower Derwent Valley SPA and Ramsar	Golden Plover	2,901	WeBS	410,000	0.0071
	Wigeon	11,316	WeBS	450,000	0.0251
Martin Mere SPA and Ramsar	Pink-footed Goose	9,918	WeBS	510,000	0.0194
	Pintail	450	WeBS	20,000	0.0225
	Whooper Swan	889	WeBS	25,800	0.0345
	Wigeon	792	WeBS	450,000	0.0018
Medway Estuary and Marshes SPA and Ramsar	Dunlin	12,195	WeBS	350,000	0.0348
	Knot	2,472	WeBS	265,000	0.0093
	Merlin	Unknown	Citation - no abundance given	2,300	0.0000
	Oystercatcher	5,094	WeBS	305,000	0.0167
	Pintail	633	WeBS	20,000	0.0317
	Redshank	1,881	WeBS	100,000	0.0188
	Red-throated Diver	0	WeBS	21,500	0.0000
	Ringed Plover	631	WeBS	42,500	0.0148

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Shelduck	2,965	WeBS	51,000	0.0581
	Turnstone	414	WeBS	43,000	0.0096
	Wigeon	3,390	WeBS	450,000	0.0075
Mersey Estuary SPA and Ramsar	Dunlin	40,720	WeBS	350,000	0.1163
	Golden Plover	1,941	WeBS	410,000	0.0047
	Pintail	203	WeBS	20,000	0.0102
	Redshank	7,057	WeBS	100,000	0.0706
	Ringed Plover	1,121	WeBS	42,500	0.0264
	Shelduck	13,704	WeBS	51,000	0.2687
	Wigeon	2,111	WeBS	450,000	0.0047
Mersey Narrows and North Wirral Foreshore SPA and Ramsar	Dunlin	7,645	Citation	350,000	0.0218
	Oystercatcher	2,718	Citation	305,000	0.0089
	Redshank	1,209	Citation	100,000	0.0121
	Sanderling	510	Citation	20,500	0.0249
Migneint-Arenig-Dduallt SPA	Merlin	24	Citation	2,300	0.0104

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Mointeach Scadabhaigh SPA	Red-throated Diver	96	Citation	21,500	0.0045
Monach Islands SPA	Greenland Barnacle Goose	760	Citation	56,000	0.0136
Montrose Basin SPA and Ramsar	Dunlin	3,603	WeBS	350,000	0.0103
	Icelandic Greylag Goose	132	WeBS	60,000	0.0022
	Oystercatcher	2,779	WeBS	305,000	0.0091
	Pink-footed Goose	62,502	WeBS	510,000	0.1226
	Redshank	3,157	WeBS	100,000	0.0316
	Shelduck	1,214	WeBS	51,000	0.0238
Moray and Nairn Coast SPA and Ramsar	Wigeon	8,703	WeBS	450,000	0.0193
	Dunlin	2689	Citation	350,000	0.0077
	Icelandic Greylag Goose	3023	Citation	60,000	0.0504
	Oystercatcher	2171	Citation	305,000	0.0071
	Pink-footed Goose	7538	Citation	510,000	0.0148
	Red-breasted Merganser	102	Citation	11,000	0.0093

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Redshank	1690	Citation	100,000	0.0169
	Wigeon	2600	Citation	450,000	0.0058
Moray Firth SPA	Great Northern Diver	144	Citation	4,400	0.0327
	Red-breasted Merganser	151	Citation	11,000	0.0137
	Red-throated Diver	324	Citation	21,500	0.0151
	Scaup	930	Citation	6,400	0.1453
	Slavonian Grebe	43	Citation	995	0.0432
	Common Scoter	5,479	Citation	135,000	0.0406
Morecambe Bay and Duddon Estuary SPA and Ramsar	Dunlin	28,138	WeBS	350,000	0.0804
	Golden Plover	5,779	WeBS	410,000	0.0141
	Knot	21,117	WeBS	265,000	0.0797
	Oystercatcher	40,752	WeBS	305,000	0.1336
	Pink-footed Goose	22,255	WeBS	510,000	0.0436
	Pintail	4,213	WeBS	20,000	0.2107
	Redshank	9,675	WeBS	100,000	0.0968

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Ringed Plover	1,244	WeBS	42,500	0.0293
	Sanderling	1346	WeBS	20,500	0.0657
	Shelduck	5,913	WeBS	51,000	0.1159
	Turnstone	1,126	WeBS	43,000	0.0262
	Whooper Swan	198	WeBS	25,800	0.0077
Muir of Dinnet SPA and Ramsar	Icelandic Greylag Goose	29,458	Citation	60,000	0.4910
Muirkirk and North Lowther Uplands SPA	Golden Plover	308	Citation	410,000	0.0008
	Merlin	19	Citation	2,300	0.0083
	Short-eared Owl	52	Citation	4,400	0.0118
Nene Washes SPA and Ramsar	Pintail	673	WeBS	20,000	0.0337
	Wigeon	10,391	WeBS	450,000	0.0231
North Inverness Lochs SPA	Slavonian Grebe	14	Citation	995	0.0141
North Norfolk Coast SPA and Ramsar	Knot	11,949	WeBS	265,000	0.0451
North Orkney SPA	Red-throated Diver	94	Citation	21,500	0.0044

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
North Pennine Moors SPA	Golden Plover	2800	Citation	410,000	0.0068
	Merlin	272	Citation	2,300	0.1183
North Sutherland Coastal Islands SPA	Greenland Barnacle Goose	631	Citation	56,000	0.0113
North Uist Machair and Islands SPA and Ramsar	Dunlin	480	Citation	350,000	0.0014
	Greenland Barnacle Goose	1500	Citation	56,000	0.0268
	Oystercatcher	1200	Citation	305,000	0.0039
	Purple Sandpiper	440	Citation	9,900	0.0444
	Redshank	1020	Citation	100,000	0.0102
	Ringed Plover	560	Citation	42,500	0.0132
North York Moors SPA	Turnstone	670	Citation	43,000	0.0156
	Golden Plover	1412	Citation	410,000	0.0034
Northern Cardigan Bay / Gogledd Bae Ceredigion SPA	Merlin	80	Citation	2,300	0.0348
	Red-throated Diver	1186	Citation	21,500	0.0552

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Northumbria Coast SPA and Ramsar	Purple Sandpiper	787	Citation	9,900	0.0795
	Turnstone	1739	Citation	43,000	0.0404
Orkney Mainland Moors SPA	Red-throated Diver	36	Citation	21,500	0.0017
	Short-eared Owl	38	Citation	4,400	0.0086
Otterswick and Graveland SPA	Red-throated Diver	52	Citation	21,500	0.0024
Ouse Washes SPA and Ramsar	Pintail	545	WeBS	20,000	0.0273
	Tufted Duck	1,595	WeBS	140,000	0.0114
	Whooper Swan	6,354	WeBS	25,800	0.2463
	Wigeon	18,975	WeBS	450,000	0.0422
Outer Ards SPA and Ramsar	Golden Plover	522	WeBS	410,000	0.0013
	Ringed Plover	203	WeBS	42,500	0.0048
	Turnstone	501	WeBS	43,000	0.0117
	Canadian Light-Bellied Brent Goose	457	WeBS	31,000	0.0147
	Red-breasted Merganser	431	Citation	11,000	0.0392

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Outer Firth of Forth and St Andrews Bay Complex SPA	Red-throated Diver	851	Citation	21,500	0.0396
	Slavonian Grebe	30	Citation	995	0.0302
	Common Scoter	775	Citation	135,000	0.0057
Outer Thames Estuary	Red-throated Diver	6,466	Citation	21,500	0.3007
Papa Stour SPA	Ringed Plover	178	Citation	42,500	0.0042
Peak District Moors (South Pennine Moors Phase 1) SPA	Golden Plover	890	Citation	410,000	0.0022
	Merlin	72	Citation	2,300	0.0313
	Short-eared Owl	50	Citation	4,400	0.0114
Pettigoe Plateau SPA and Ramsar	Golden Plover	Unknown	Citation - no abundance given	410,000	0.0000
Poole Harbour SPA and Ramsar	Shelduck	871	WeBS	51,000	0.0171
Portsmouth Harbour SPA and Ramsar	Dunlin	4,945	WeBS	350,000	0.0141
	Red-breasted Merganser	67	WeBS	11,000	0.0061
Ribble and Alt Estuaries SPA and Ramsar	Common Scoter	14,382	WeBS	135,000	0.1065
	Dunlin	63,464	WeBS	350,000	0.1813

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Golden Plover	5,472	WeBS	410,000	0.0133
	Knot	45,075	WeBS	265,000	0.1701
	Oystercatcher	16,270	WeBS	305,000	0.0533
	Pink-footed Goose	35,316	WeBS	510,000	0.0692
	Pintail	1,696	WeBS	20,000	0.0848
	Redshank	2,490	WeBS	100,000	0.0249
	Ringed Plover	4,720	WeBS	42,500	0.1111
	Sanderling	6,474	WeBS	20,500	0.3158
	Scaup	21	WeBS	6,400	0.0033
	Shelduck	5,571	WeBS	51,000	0.1092
	Whimbrel	239	WeBS	3,840	0.0622
	Whooper Swan	759	WeBS	25,800	0.0294
	Wigeon	39,253	WeBS	450,000	0.0872
Rinns of Islay SPA and Ramsar	Greenland White-fronted Goose	1820	Citation	11,500	0.1583
	Whooper Swan	140	Citation	25,800	0.0054

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Common Scoter	30	Citation	135,000	0.0002
River Spey - Insh Marshes SPA and Ramsar	Whooper Swan	74	WeBS	25,800	0.0029
	Wigeon	340	WeBS	450,000	0.0008
Ronas Hill - North Roe and Tingon SPA and Ramsar	Red-throated Diver	112	Citation	21,500	0.0052
Rum SPA	Red-throated Diver	26	Citation	21,500	0.0012
Rutland Water SPA and Ramsar	Tufted Duck	4,870	WeBS	140,000	0.0348
	Wigeon	3,709	WeBS	450,000	0.0082
Scapa Flow SPA	Red-throated Diver	152	Citation	21,500	0.0071
Severn Estuary SPA and Ramsar	Dunlin	27,695	WeBS	350,000	0.0791
	Redshank	4,432	WeBS	100,000	0.0443
	Shelduck	7,696	WeBS	51,000	0.1509
Shiant Isles SPA	Greenland Barnacle Goose	490	Citation	56,000	0.0088
Skomer, Skokholm and the Seas off Pembrokeshire SPA	Short-eared Owl	12	Citation	4,400	0.0027

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Sléibhteán agus Cladach Thiriodh (Tiree Wetlands and Coast) SPA and Ramsar	Dunlin	228	Citation	350,000	0.0007
	Greenland Barnacle Goose	1456	Citation	56,000	0.0260
	Greenland White-fronted Goose	1419	Citation	11,500	0.1234
	Oystercatcher	320	Citation	305,000	0.0010
	Redshank	280	Citation	100,000	0.0028
	Ringed Plover	202	Citation	42,500	0.0048
	Turnstone	873	Citation	43,000	0.0203
Solent and Southampton Water SPA and Ramsar	Ringed Plover	552	Citation	42,500	0.0130
Solway Firth SPA	Common Scoter	1588	Citation	135,000	0.0118
	Dunlin	11,900	Citation	350,000	0.0340
	Golden Plover	3,380	Citation	410,000	0.0082
	Knot	15,300	Citation	265,000	0.0577
	Oystercatcher	33,850	Citation	305,000	0.1110

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
	Pink-footed Goose	14,900	Citation	510,000	0.0292
	Pintail	1,400	Citation	20,000	0.0700
	Redshank	2,100	Citation	100,000	0.0210
	Red-throated Diver	521	Citation	21,500	0.0242
	Ringed Plover	981	Citation	42,500	0.0231
	Sanderling	260	Citation	20,500	0.0127
	Scaup	2,300	Citation	6,400	0.3594
	Shelduck	1,600	Citation	51,000	0.0314
	Turnstone	600	Citation	43,000	0.0140
	Whooper Swan	250	Citation	25,800	0.0097
Somerset Levels and Moors SPA and Ramsar	Golden Plover	3857	Citation	410,000	0.0094
Sound of Gigha SPA	Great Northern Diver	131	WeBS	4,400	0.0298
	Red-breasted Merganser	293	WeBS	11,000	0.0266
	Slavonian Grebe	42	WeBS	995	0.0422
	Golden Plover	584	Citation	410,000	0.0014

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
South Pennine Moors Phase 2 SPA	Merlin	56	Citation	2,300	0.0243
	Short-eared Owl	Unknown	Citation - no abundance given	4,400	0.0000
South Tayside Goose Roosts SPA and Ramsar	Icelandic Greylag Goose	9700	Citation	60,000	0.1617
	Pink-footed Goose	31800	Citation	510,000	0.0624
	Wigeon	32	Citation	450,000	0.0001
South Uist Machair and Lochs SPA and Ramsar	Dunlin	714	Citation	350,000	0.0020
	Oystercatcher	1258	Citation	305,000	0.0041
	Redshank	758	Citation	100,000	0.0076
	Ringed Plover	786	Citation	42,500	0.0185
	Sanderling	1334	Citation	20,500	0.0651
Stangford Lough SPA and Ramsar	Canadian Light-Bellied Brent Goose	10,527	Citation	31,000	0.3396
Stodmarsh SPA and Ramsar	Snipe	34	WeBS	1,100,000	0.0000
	Tufted Duck	83	WeBS	140,000	0.0006
	Wigeon	440	WeBS	450,000	0.0010
	Dunlin	14,451	WeBS	350,000	0.0413

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Stour and Orwell Estuaries SPA and Ramsar	Golden Plover	884	WeBS	410,000	0.0022
	Knot	10,362	WeBS	265,000	0.0391
	Pintail	444	WeBS	20,000	0.0222
	Redshank	2,569	WeBS	100,000	0.0257
	Ringed Plover	366	WeBS	42,500	0.0086
	Scaup	4	WeBS	6,400	0.0006
	Shelduck	2423	WeBS	51,000	0.0475
	Turnstone	711	WeBS	43,000	0.0165
	Wigeon	3,772	WeBS	450,000	0.0084
Strangford Lough SPA and Ramsar	Knot	3,702	WeBS	265,000	0.0140
	Redshank	2,650	WeBS	100,000	0.0265
Switha SPA	Greenland Barnacle Goose	1,120	Citation	56,000	0.0200
Teesmouth and Cleveland Coast SPA and Ramsar	Knot	3,574	Citation	265,000	0.0135
	Redshank	Unknown	Citation - no abundance given	100,000	0.0000
	Dunlin	27,400	WeBS	350,000	0.0783

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Thames Estuary and Marshes SPA and Ramsar	Knot	19,955	WeBS	265,000	0.0753
	Redshank	2,423	WeBS	100,000	0.0242
	Ringed Plover	828	WeBS	42,500	0.0195
Thanet Coast and Sandwich Bay SPA and Ramsar	Golden Plover	22	WeBS	410,000	0.0001
	Turnstone	264	WeBS	43,000	0.0061
The Dee Estuary SPA and Ramsar	Dunlin	20,503	WeBS	350,000	0.0586
	Knot	24,681	WeBS	265,000	0.0931
	Oystercatcher	27,285	WeBS	305,000	0.0895
	Pintail	4,709	WeBS	20,000	0.2355
	Redshank	10,294	WeBS	100,000	0.1029
	Shelduck	8,385	WeBS	51,000	0.1644
The Swale SPA and Ramsar	Dunlin	8,728	WeBS	350,000	0.0249
	Oystercatcher	3,645	WeBS	305,000	0.0120
	Redshank	1,505	WeBS	100,000	0.0151
	Ringed Plover	355	WeBS	42,500	0.0084
	Dunlin	28,364	WeBS	350,000	0.0810

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
The Wash SPA and Ramsar	Knot	222,796	WeBS	265,000	0.8407
	Oystercatcher	22,836	WeBS	305,000	0.0749
	Pink-footed Goose	26,281	WeBS	510,000	0.0515
	Pintail	543	WeBS	20,000	0.0272
	Redshank	5,727	WeBS	100,000	0.0573
	Sanderling	9,073	WeBS	20,500	0.4426
	Shelduck	3,065	WeBS	51,000	0.0601
	Turnstone	919	WeBS	43,000	0.0214
	Wigeon	11,107	WeBS	450,000	0.0247
	Common Scoter	324	WeBS	135,000	0.0024
Traeth Lafan/ Lavan Sands Conway Bay SPA	Oystercatcher	5,313	WeBS	305,000	0.0174
	Red-breasted Merganser	27	WeBS	11,000	0.0025
	Redshank	1,610	WeBS	100,000	0.0161
Treshnish Isles SPA	Greenland Barnacle Goose	560	Citation	56,000	0.0100

SPA	Species	SPA Population	SPA Population Source	UK Population	Apportioning Value
Upper Lough Erne SPA and Ramsar	Whooper Swan	468	WeBS	25,800	0.0181
Upper Nene Valley Gravel Pits SPA and Ramsar	Golden Plover	5,790	Citation	410,000	0.0141
	Tufted Duck	1,187	Citation	140,000	0.0085
	Wigeon	5,001	Citation	450,000	0.0111
West Coast of the Outer Hebrides SPA	Great Northern Diver	1,298	Citation	4,400	0.2950
	Red-breasted Merganser	239	Citation	11,000	0.0217
	Red-throated Diver	116	Citation	21,500	0.0054
	Slavonian Grebe	51	Citation	995	0.0513
West Invernessshire Loch SPA	Common Scoter	16	Citation	135,000	0.0001
Westwater SPA and Ramsar	Pink-footed Goose	29,600	Citation	510,000	0.0580
Ythan Estuary Sands of Forvie and Meikle Loch SPA and Ramsar	Pink-footed Goose	15,370	WeBS	510,000	0.0301
	Redshank	1,743	WeBS	100,000	0.0174

4 DISCUSSION

- 4.1.1.1 This appendix uses NatureScot's theoretical approach to apportioning impacts to breeding seabirds in SPAs and its consideration of immature birds.
- 4.1.1.2 For kittiwake, in the breeding season, the SPA colonies with the highest apportionment of birds are the Handa SPA (14.5%), the East Caithness Cliffs SPA (11.7%), and the Cape Wrath SPA (10.0%). In the post-breeding and pre-breeding seasons, birds come from a much wider range of SPAs and non-SPA colonies (including overseas colonies) and therefore the proportion attributed to SPAs with an LSE identified are small.
- 4.1.1.3 For guillemot, in the breeding season, most birds are apportioned to the Handa SPA (52.2%), the Cape Wrath SPA (23.1%), or the Flannan Isles SPA (12.0%). In the non-breeding season, apportionment is to the same colonies and the Handa SPA and the Cape Wrath SPA remain important (25.0% and 17.4%, respectively).
- 4.1.1.4 For razorbill, most birds are apportioned to the Handa SPA (36.6%), or the Shiant Isles SPA (29.1%). In the non-breeding seasons, birds come from a much wider range of SPAs and non-SPA colonies (including overseas colonies) and therefore the proportion attributed to SPAs with an LSE identified are small.
- 4.1.1.5 For puffin, in the breeding season most birds are apportioned to the Flannan Isles SPA (53.6%), the Shiant Isles SPA (20.3%), or the St Kilda SPA (16.8%). In the non-breeding season, the St Kilda SPA (16.8%) remains relatively important, although birds come from a much wider range of SPAs and non-SPA colonies (including overseas colonies) and therefore the proportion attributed to SPAs with an LSE identified are smaller.
- 4.1.1.6 For red-throated diver, in the breeding season all birds are apportioned to the Lewis Peatlands SPA (100%). In the non-breeding seasons, the Lewis Peatlands SPA (from 3.5 to 7.4%) is much less presented with an influx of birds from other countries, and therefore the proportion attributed to the SPA with an LSE identified is smaller.
- 4.1.1.7 For gannet, in the breeding season the majority of birds are apportioned to St Kilda SPA (45.4%), North Rona and Sula Sgeir SPA (18.4%), or non-SPA colonies (in particular the colony on the Flannan Isles – gannet is not a designated feature or named assemblage component of the Flannan Isles SPA). In the non-breeding seasons, of the SPAs screened in, the highest apportionment values are to Grassholm SPA (11.9%) and St Kilda SPA (18.0%), although it should also be noted that in the non-breeding seasons, birds come from a much wider range of SPAs and non-SPA colonies (including overseas colonies) and therefore the proportion attributed to the SPAs with an LSE identified are small.
- 4.1.1.8 For gannet in the breeding season, it should be noted that tracking data indicate spatial partitioning of foraging ranges (Wakefield *et al.*, 2013), which is contrary to the theoretical

approach advised in NatureScot (2018). Of the colonies from which Wakefield *et al.* (2013) presented tracking data, all birds recorded foraging in the region in which the Offshore Project is located were from St Kilda; however, given no tracking data was available from other relevant colonies such as North Rona and Sula Sgeir SPA, these results are not considered sufficient to amend the apportioning results set out in Section 3.

4.1.1.9 The results are based on a number of assumptions, each of which introduces some uncertainty into the apportioning process. In line with best practice and the precautionary principle, these assumptions are applied consistently and are considered to provide a suitably conservative basis for assessment. The key assumptions are as follows:

- Breeding adult birds:
 - Birds are assumed to be evenly distributed at sea, with this being extremely unlikely due to the known patchy distribution of prey species and information gained from tracking studies;
 - Seabird colonies are assumed to be independent of one another;
 - Larger breeding colonies are assumed to be associated with larger foraging ranges, reflecting competition and local prey depletion (Elliott *et al.*, 2009);
 - The use of MM + 1 SD 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.

4.1.1.10 Consideration has been given in the **Offshore RIAA** to these assumptions/limitations, including where available site-specific tracking studies, and what effect they may have on the overall magnitude of any impacts (see Section 8 within the **Offshore RIAA**). Further information on foraging range and immature proportions is provided in Sections 4.2 and 4.3 in this appendix.

4.2 FORAGING RANGE

4.2.1.1 NatureScot (2023b) typically recommends the use of the MMFR + 1 SD for each species considered.

4.2.1.2 The use of a MMFR + 1 SD represents a highly precautionary approach regardless of its application. This is because although it ensures, from a HRA screening perspective, that no SPAs are erroneously omitted from the RIAA, the likelihood of an LSE occurring as a result of any project beyond MMFR is considered highly unlikely. A MMFR already represents the average of the maximum foraging ranges exhibited by birds across multiple studies. A SD 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 It is considered that the application of a MMFR + 1 SD, and in some cases site-specific maximum foraging ranges (such as for gannet) that extend beyond this, is considered likely to be over-precautionary for apportioning purposes. This approach may include distant SPAs where the actual impact is expected to be negligible or zero. It also distributes impacts across a larger number of SPAs, which can potentially dilute the estimated impacts on nearby colonies. Nevertheless, this method is recommended by NatureScot (2023b) and has therefore been applied in this apportioning assessment.

4.3 IMMATURE PROPORTIONS

- 4.3.1.1 Although any population of breeding seabirds has an immature component associated with it, the spatial distribution of the immature 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 (i.e., the birds obtain an adult type plumage before they are physically old enough to breed), resulting immature proportions represent an under-estimate.
- 4.3.1.2 In the context of this appendix, this is relevant to kittiwake. Whilst 1 year old kittiwakes can be easily identified due to differences in plumage, 2 and 3-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. As set out in Section 2.3.3, the proportion of 2 and 3-year immatures (which show a much greater affinity for natal waters than 1-year birds) will be under-estimated.
- 4.3.1.3 As detailed in Section 2.3.3, an approach has been applied which aims to address the underestimation. Whilst maintaining the proportion represented of each year class of immatures at the Offshore Project, mortality reduces the absolute number of birds present from each successive year class of kittiwake. In calculating the number of 2 and 3-year old kittiwakes at the Offshore Project, the analysis uses survival rates of each immature age class of kittiwake that follows the 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 Project;
- A smaller proportion of 1 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.

4.3.1.4 The identification of immature age classes of 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.

4.3.1.5 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 such as Horswill & Robinson (2015) will be relied upon within the **Offshore RIAA**. Age classes for use in the RIAA are presented in **Table 2-5**.

4.4 MIGRATORY BIRDS

4.4.1.1 To calculate SPA apportioning weights, the SPA population (either updated WeBS data or citation value) was used where available, with this estimate invariably representing the annual peak abundance for the species at the site. As a result, for species where individuals contribute to the annual peak abundance of more than 1 SPA, those individuals will be apportioned to 2 or more SPAs. For example, a cohort of the knot that moult on The Wash in autumn coinciding with the site's annual peak abundance for the species, before relocating to the Tees Estuary in early winter (Ward *et al.*, 2003), where they also contribute to that site's peak abundance (which occurs in winter).

4.4.1.2 While this approach can result in some individuals being counted across more than 1 site, it ensures that the apportionment at the SPA level captures the best available estimate of total site usage. This is particularly important given the difficulty of accounting for turnover as birds stage during dispersal and migration. For instance, dye-marking studies showed that the passage of shelduck through the Tees Estuary was more than twice the maximum number recorded on any single count (Evans, 1984).

5 GLOSSARY OF TERMS AND ABBREVIATIONS

5.1.1.1 A list of key terms and acronyms used in this appendix are provided in **Table 5-1** and **Table 5-2**.

Table 5-1: Acronyms and abbreviations

Term	Definition
AEOI	Adverse Effect on Integrity
AON	Apparently Occupied Nests
BDMPS	Biologically Defined Minimum Population Scale
DAS	Digital Aerial Surveys
EIAR	Environmental Impact Assessment Report
HRA	Habitats Regulations Appraisal
IND	Individuals Counted at the Colony
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MHWS	Mean High Water Springs
MM	Mean-max
MMFR	Mean-max Foraging Range
OCAS	Offshore Cable Area of Search
OSP	Offshore Substation Platform
RIAA	Report to Inform Appropriate Assessment
SD	Standard Deviation
SPA	Special Protection Area
WTG	Wind Turbine Generator
UK	United Kingdom

Table 5-2: Glossary

Term	Meaning
Array Area	The offshore area within which the offshore wind turbine generators (WTGs), associated foundations, Offshore Cables, and Offshore Substation Platform (OSP) (if required), will be located. This area encompasses the Turbine Area that will contain all above water surface infrastructure (WTGs/OSP) and an additional area within which further below water infrastructure (foundations and cables) may also be located.
Offshore Project	The offshore components of the Spiorad na Mara offshore wind farm (the Project) located seaward of Mean High Water Springs (MHWS).
Offshore Ornithology Study Area	The area over which potentially significant impacts from the Offshore Project have the most potential

	to occur to ornithological receptors, consisting of the Turbine Area plus a 4 km buffer (excluding land).
Offshore Ornithology Survey Area	The area covered by Digital Aerial Surveys (DAS), consisting of the ScotWind N4 site plus a 10 km buffer (excluding land).
Special Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive 74/409/EEC) to protect important bird habitats. Implemented under the Wildlife and Countryside Act 1981.
Turbine Area	A reduced area within the Array Area where above water surface infrastructure would be located i.e., wind turbine generators (WTG) or Offshore Substation Platform (OSP). This area has been developed and refined through stakeholder consultation and environmental assessment.

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