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## **Volume 7B Proposed Development (Offshore) Appendices**

Appendix 6-1 Offshore Ornithology Baseline Characterisation Report Annex 7 Model-based and Design-based Density and Abundance Estimates of All Birds (Caledonia South)

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# Volume 7B Appendix 6-1 Annex 7 Model-based and Design-based Density and Abundance Estimates of All Birds (Caledonia South)

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## Acronyms and Abbreviations

<b>CV</b>	Coefficient of Variation
<b>DAS</b>	Digital Aerial Survey
<b>LCI</b>	Lower Confidence Interval
<b>OWF</b>	Offshore Wind Farm
<b>UCI</b>	Upper Confidence Interval

# 1 Introduction

- 1.1.1.1 This annex provides the design-based density and abundance estimates for all birds recorded (in flight and on sea) in the Caledonia Offshore Wind Farm (OWF), specifically the Caledonia South Site, and relevant buffers (2km and 4km). Model-based density and abundance estimates have also been provided for common guillemot *Uria aalge*, razorbill *Alca torda* and puffin *Fratercula arctica*, and kittiwake *Rissa tridactyla*, as per the approach presented to NatureScot (01 July 2024) and agreed with NatureScot within in an email dated 07 August 2024. For the full justification see Volume 7B, Appendix 6-1: Offshore Ornithology Baseline Characterisation Report.
- 1.1.1.2 The tables below provide both the unapportioned and apportioned estimates, with an availability bias correction factor applied to the relevant species (common guillemot; razorbill; and puffin).
- 1.1.1.3 For each species recorded within the 24-month Digital Aerial Survey (DAS) the raw count, abundance estimate (number of birds), lower and upper confidence intervals (LCI and UCI), density (birds/km<sup>2</sup>) and the Coefficient of Variation (CV) as a measure of precision.
- 1.1.1.4 As per the NatureScot guidance (NatureScot, 2023<sup>1</sup>), tables on species abundance and density have been ordered first by taxonomic species groupings, then by most abundant species within each grouping.

## 2 Species Accounts

### 2.1 Wildfowl

#### 2.1.1 Unidentified species

##### Unidentified wader species

2.1.1.1 The density and population estimates of unidentified wader species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-1.

Table 2-1: Density and population estimate of all unidentified wader species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
<i>None recorded</i>						
<b>Caledonia South (+4km)</b>						
Jul-22	1	6	1	17	0.01	1.00

#### 2.1.2 Pink-footed goose

2.1.2.1 No pink-footed geese density were recorded in Caledonia South.

#### 2.1.3 Mallard

2.1.3.1 The density and population estimates of mallard in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-2.

Table 2-2: Density and population estimate of all mallard in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Feb-22	2	11	2	32	0.05	0.71
<b>Caledonia South (+2km)</b>						
Feb-22	2	11	2	32	0.03	0.71
<b>Caledonia South (+4km)</b>						
Feb-22	2	11	2	33	0.02	0.71

## 2.2 Laridae

### 2.2.1 Unidentified species

#### Unidentified black backed gull species

2.2.1.1 The density and population estimates of unidentified black backed gull species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-3.

Table 2-3: Density and population estimate of all unidentified black backed gull species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Nov-21	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Nov-21	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Nov-21	1	6	1	17	0.01	1.00

## Unidentified large gull species

2.2.1.2 The density and population estimates of unidentified large gull species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-4.

Table 2-4: Density and population estimate of all unidentified large gull species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Nov-21	7	40	7	86	0.19	0.38
Mar-22	1	5	1	16	0.02	1.00
Jul-22	8	47	8	128	0.22	0.35
Nov-22	1	6	1	18	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Oct-21	1	6	1	17	0.02	1.00
Nov-21	10	57	11	114	0.16	0.32
Mar-22	1	5	1	16	0.01	1.00
Jul-22	10	58	10	168	0.16	0.32
Nov-22	1	6	1	17	0.02	1.00
Apr-23	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Aug-21	1	6	1	18	0.01	1.00
Oct-21	1	6	1	17	0.01	1.00
Nov-21	14	80	34	144	0.15	0.27
Apr-22	1	5	1	16	0.01	1.00
Jul-22	12	69	12	203	0.13	0.29
Nov-22	1	6	1	18	0.01	1.00
Apr-23	1	6	1	17	0.01	1.00

## Unidentified gull species

2.2.1.3 The density and population estimates of unidentified gull species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-5.

Table 2-5: Density and population estimate of all unidentified gull species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Aug-22	1	6	1	17	0.03	1.00
Dec-22	1	6	1	18	0.03	1.00
<b>Caledonia South (+2km)</b>						
May-21	1	6	1	17	0.02	1.00
Aug-22	1	6	1	17	0.02	1.00
Dec-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Jun-21	1	6	1	17	0.01	1.00
Sep-21	1	6	1	17	0.01	1.00
Aug-22	1	6	1	17	0.01	1.00
Dec-22	1	6	1	18	0.01	1.00

## Unidentified fulmar and/or gull species

2.2.1.4 The density and population estimates of unidentified fulmar and/or gull species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-6.

Table 2-6: Density and population estimate of all unidentified fulmar and/or gull species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Nov-22	1	6	1	18	0.03	1.00
Mar-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Nov-22	1	6	1	17	0.02	1.00
Mar-23	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	17	0.01	1.00

## 2.2.2 Kittiwake

2.2.2.1 The density and population estimates of kittiwake in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using model-based analysis for the breeding season (Mid-April to August) and design-based analysis for the non-breeding season (September to mid-April) have been presented in Table 2-7. Only the apportioned density and abundance estimates for kittiwake are presented, as the data approach relies on both design- and model-based estimates.

Table 2-7: Apportioned density and population estimate of all kittiwake in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis for the breeding season (Mid-April to August) and design-based analysis for the non-breeding season (September to Mid-April). Not corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	139	79	255	0.69
Jun-21	292	164	557	1.48
Jul-21	904	400	2249	4.47
Aug-21	316	157	687	1.60
Sep-21	41	18	75	0.19
Oct-21	106	38	199	0.50
Nov-21	58	10	139	0.28
Dec-21	29	7	63	0.14
Jan-22	12	2	29	0.06
Feb-22	32	8	64	0.15
Mar-22	16	5	32	0.08
Apr-22	85	49	149	0.43
May-22	336	147	766	1.70
Jun-22	669	308	1568	3.39
Jul-22	740	361	1622	3.75
Aug-22	207	115	373	1.04
Sep-22	81	22	169	0.38
Oct-22	41	14	88	0.19
Nov-22	24	4	71	0.12
Dec-22	14	2	42	0.07
Jan-23	6	1	18	0.03
Feb-23	34	8	63	0.16



Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Mar-23	12	2	29	0.06
Apr-23	185	42	807	0.92
<b>Caledonia South (+2km)</b>				
May-21	254	136	519	0.73
Jun-21	549	287	1,195	1.59
Jul-21	1,650	686	4,769	4.77
Aug-21	603	280	1,436	1.74
Sep-21	705	122	1,994	1.96
Oct-21	162	90	272	0.45
Nov-21	177	77	304	0.49
Dec-21	58	13	121	0.16
Jan-22	11	2	29	0.03
Feb-22	32	8	64	0.09
Mar-22	42	17	79	0.12
Apr-22	158	87	312	0.45
May-22	639	274	1,542	1.84
Jun-22	1,272	574	3,110	3.67
Jul-22	1,410	644	3,404	4.07
Aug-22	391	208	772	1.12
Sep-22	149	45	292	0.41
Oct-22	138	50	254	0.38
Nov-22	52	9	125	0.15
Dec-22	25	6	68	0.07
Jan-23	6	1	17	0.02
Feb-23	57	20	97	0.16
Mar-23	41	10	83	0.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	336	75	1617	0.96
<b>Caledonia South (+4km)</b>				
May-21	383	203	794	0.73
Jun-21	834	426	1,839	1.59
Jul-21	2,351	980	6,756	4.40
Aug-21	904	413	2184	1.72
Sep-21	860	170	2,276	1.61
Oct-21	267	168	371	0.50
Nov-21	351	166	529	0.66
Dec-21	99	37	174	0.19
Jan-22	23	6	40	0.04
Feb-22	60	16	114	0.11
Mar-22	81	34	134	0.15
Apr-22	232	126	456	0.44
May-22	957	407	2347	1.82
Jun-22	1905	870	4636	3.61
Jul-22	2114	952	5154	4.01
Aug-22	575	305	1142	1.09
Sep-22	204	82	362	0.38
Oct-22	182	81	323	0.34
Nov-22	76	13	165	0.14
Dec-22	32	5	76	0.06
Jan-23	12	2	29	0.02
Feb-23	121	41	231	0.23
Mar-23	77	23	132	0.14
Apr-23	480	110	2,270	0.90

## 2.2.3 Great black-backed gull

2.2.3.1 The density and population estimates of great black-backed gull in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-8 and Table 2-9.

2.2.3.2 Table 2-8 includes the unapportioned density and population estimates of great black-backed gull, and Table 2-9 includes the apportioned density and population estimates of great black-backed gull.

Table 2-8: Unapportioned density and population estimate of all great black-backed gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Nov-21	58	334	127	651	1.59	0.13
Dec-21	4	23	6	46	0.11	0.50
Jan-22	11	64	35	92	0.30	0.30
Feb-22	8	43	11	76	0.20	0.35
Sep-22	1	6	1	17	0.03	1.00
Oct-22	10	59	24	100	0.28	0.32
Nov-22	1	6	1	18	0.03	1.00
Jan-23	9	53	18	94	0.25	0.33
Feb-23	4	23	6	40	0.11	0.50
<b>Caledonia South (+2km)</b>						
Nov-21	74	424	212	739	1.18	0.12
Dec-21	5	29	6	58	0.08	0.45
Jan-22	17	98	46	149	0.27	0.24
Feb-22	19	101	64	139	0.28	0.23
Sep-22	2	11	2	29	0.03	0.71
Oct-22	15	86	40	132	0.24	0.26
Nov-22	10	58	29	87	0.16	0.32
Dec-22	3	17	6	35	0.05	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jan-23	10	57	23	98	0.16	0.32
Feb-23	7	40	11	68	0.11	0.38
Mar-23	2	12	2	29	0.03	0.71
<b>Caledonia South (+4km)</b>						
Sep-21	14	81	14	244	0.15	0.27
Oct-21	1	6	1	17	0.01	1.00
Nov-21	96	552	259	937	1.03	0.10
Dec-21	7	40	12	69	0.07	0.38
Jan-22	26	150	86	219	0.28	0.20
Feb-22	30	163	87	255	0.31	0.18
Mar-22	1	5	1	16	0.01	1.00
Sep-22	4	23	6	41	0.04	0.50
Oct-22	24	141	76	206	0.26	0.20
Nov-22	14	82	47	117	0.15	0.27
Dec-22	11	65	18	118	0.12	0.30
Jan-23	18	105	41	181	0.20	0.24
Feb-23	9	52	23	81	0.10	0.33
Mar-23	3	17	3	35	0.03	0.58

Table 2-9: Apportioned density and population estimate of all great black-backed gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Nov-21	377	129	776	1.79
Dec-21	24	4	52	0.11
Jan-22	63	20	110	0.30
Feb-22	43	8	98	0.20
Mar-22	5	1	16	0.02
Sep-22	6	1	17	0.03
Oct-22	59	24	100	0.28
Nov-22	8	1	27	0.04
Jan-23	52	12	100	0.25
Feb-23	23	7	51	0.11
<b>Caledonia South (+2km)</b>				
Oct-21	5	5	15	0.02
Nov-21	481	240	892	1.34
Dec-21	29	5	64	0.08
Jan-22	97	34	160	0.27
Feb-22	102	29	186	0.28
Mar-22	5	5	16	0.01
Sep-22	11	2	29	0.03
Oct-22	87	37	162	0.24
Nov-22	64	30	126	0.18
Dec-22	19	5	39	0.05
Jan-23	58	16	103	0.16
Feb-23	40	9	74	0.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Mar-23	12	2	29	0.03
Apr-23	6	6	17	0.02
<b>Caledonia South (+4km)</b>				
Sep-21	81	14	243	0.15
Oct-21	12	2	34	0.02
Nov-21	632	278	1,132	1.18
Dec-21	40	7	87	0.07
Jan-22	150	69	230	0.28
Feb-22	163	66	276	0.31
Mar-22	10	2	32	0.02
Sep-22	24	4	53	0.04
Oct-22	141	73	235	0.26
Nov-22	86	28	156	0.16
Dec-22	66	18	142	0.12
Jan-23	105	24	211	0.20
Feb-23	52	18	86	0.10
Mar-23	17	3	35	0.03
Apr-23	6	1	17	0.01

## 2.2.4 Herring gull

2.2.4.1 The density and population estimates of herring gull in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-10 and Table 2-11.

2.2.4.2 Table 2-10 includes the unapportioned density and population estimates of herring gull, and Table 2-11 includes the apportioned density and population estimates of herring gull.

Table 2-10: Unapportioned density and population estimate of all herring gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jun-21	1	6	1	17	0.03	1.00
Nov-21	6	35	6	81	0.17	0.41
Jan-22	1	6	1	17	0.03	1.00
Feb-22	1	5	1	16	0.02	1.00
Jul-22	4	23	4	70	0.11	0.50
Oct-22	1	6	1	18	0.03	1.00
Nov-22	3	18	6	35	0.09	0.58
Dec-22	4	24	4	71	0.11	0.50
Feb-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Jun-21	1	6	1	17	0.02	1.00
Nov-21	8	46	8	97	0.13	0.35
Dec-21	2	12	2	29	0.03	0.71
Jan-22	1	6	1	17	0.02	1.00
Feb-22	1	5	1	16	0.01	1.00
Jul-22	6	35	6	87	0.10	0.41
Oct-22	2	12	2	29	0.03	0.71
Nov-22	3	17	3	35	0.05	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	5	29	5	87	0.08	0.45
Feb-23	2	11	2	29	0.03	0.71
<b>Caledonia South (+4km)</b>						
Jun-21	1	6	1	17	0.01	1.00
Nov-21	8	46	8	98	0.09	0.35
Dec-21	2	12	2	29	0.02	0.71
Jan-22	1	6	1	17	0.01	1.00
Feb-22	7	38	7	98	0.07	0.38
Jul-22	28	162	41	307	0.30	0.19
Oct-22	2	12	2	23	0.02	0.71
Nov-22	3	18	3	35	0.03	0.58
Dec-22	6	35	6	94	0.07	0.41
Feb-23	2	12	2	29	0.02	0.71



Table 2-11: Apportioned density and population estimate of all herring gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jun-21	6	1	17	0.03
Nov-21	39	7	93	0.19
Jan-22	6	1	17	0.03
Feb-22	5	1	16	0.02
Jul-22	47	8	137	0.22
Oct-22	6	1	18	0.03
Nov-22	22	4	52	0.11
Dec-22	26	4	77	0.13
Feb-23	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Jun-21	6	1	17	0.02
Oct-21	1	1	2	-
Nov-21	51	14	121	0.14
Dec-21	12	2	29	0.03
Jan-22	6	1	17	0.02
Feb-22	5	1	16	0.01
Jul-22	70	41	168	0.19
Oct-22	12	2	34	0.03
Nov-22	19	4	44	0.05
Dec-22	31	7	93	0.09
Feb-23	11	2	29	0.03
<b>Caledonia South (+4km)</b>				
Jun-21	6	1	17	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jul-21	4	1	10	0.01
Nov-21	51	9	120	0.10
Dec-21	12	2	29	0.02
Jan-22	6	1	17	0.01
Feb-22	38	7	103	0.07
Jul-22	208	36	465	0.39
Oct-22	12	2	36	0.02
Nov-22	19	3	52	0.04
Dec-22	38	6	106	0.07
Feb-23	12	2	29	0.02

## 2.2.5 Common gull

2.2.5.1 The density and population estimates of common gull in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-12 and Table 2-13.

2.2.5.2 Table 2-12 includes the unapportioned density and population estimates of common gull, and Table 2-13 includes the apportioned density and population estimates of common gull.

Table 2-12: Unapportioned density and population estimate of all common gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Dec-22	1	6	1	18	0.03	1.00
<b>Caledonia South (+2km)</b>						
Sep-21	6	35	6	104	0.10	0.41
Dec-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Sep-21	6	35	6	105	0.07	0.41
Aug-22	2	11	2	34	0.02	0.71
Dec-22	1	6	1	18	0.01	1.00

Table 2-13: Apportioned density and population estimate of all common gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Dec-22	7	1	22	0.03
<b>Caledonia South (+2km)</b>				
Sep-21	35	6	104	0.10
Dec-22	7	2	19	0.02
<b>Caledonia South (+4km)</b>				
Sep-21	35	6	105	0.07
Aug-22	11	2	34	0.02
Dec-22	6	1	20	0.01

## 2.2.6 Lesser black-backed gull

2.2.6.1 The density and population estimates of lesser black-backed gull in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-14 and Table 2-15.

2.2.6.2 Table 2-14 includes the unapportioned density and population estimates of lesser black-backed gull, and Table 2-15 includes the apportioned density and population estimates of lesser black-backed gull.

Table 2-14: Unapportioned density and population estimate of all lesser Black-backed gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jul-22	4	23	4	70	0.11	0.50
<b>Caledonia South (+2km)</b>						
Jul-22	4	23	4	69	0.06	0.50
<b>Caledonia South (+4km)</b>						
Jul-22	6	35	6	93	0.07	0.41

Table 2-15: Apportioned density and population estimate of all lesser black-backed gull in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jul-22	47	8	137	0.22
<b>Caledonia South (+2km)</b>				
Jul-22	46	27	144	0.13
<b>Caledonia South (+4km)</b>				
Jul-21	2	-	8	-
Jul-22	58	10	190	0.11

## 2.3 Sterninae

### 2.3.1 Unidentified species

#### Commic tern

2.3.1.1 The density and population estimates of commic tern in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-16.

Table 2-16: Density and population estimate of all unidentified commic tern species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
May-21	3	17	3	52	0.05	0.58
Aug-22	4	23	4	57	0.06	0.50
<b>Caledonia South (+4km)</b>						
May-21	3	17	3	52	0.03	0.58
Aug-21	2	12	2	35	0.02	0.71
May-22	2	11	2	34	0.02	0.71
Aug-22	7	40	7	86	0.07	0.38

## Unidentified tern species

2.3.1.2 The density and population estimates of unidentified tern species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-17.

Table 2-17: Density and population estimate of unidentified tern in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
May-21	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
May-21	1	6	1	17	0.02	1.00

## 2.3.2 Common tern

2.3.2.1 The density and population estimates of common tern in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-18 and Table 2-19.

2.3.2.2 Table 2-18 includes the unapportioned density and population estimates of common tern, and Table 2-19 includes the apportioned density and population estimates of common tern.

Table 2-18: Unapportioned density and population estimate of all common tern in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
<i>None recorded</i>						
<b>Caledonia South (+4km)</b>						
Aug-21	3	17	3	52	0.03	0.58

Table 2-19: Apportioned density and population estimate of all common tern in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
<i>None recorded</i>				
<b>Caledonia South (+2km)</b>				
<i>None recorded</i>				
<b>Caledonia South (+4km)</b>				
Aug-21	29	5	87	0.05

### 2.3.3 Arctic tern

2.3.3.1 The density and population estimates of Arctic tern in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-20 and Table 2-21.

2.3.3.2 Table 2-20 includes the unapportioned density and population estimates of Arctic tern, and Table 2-21 includes the apportioned density and population estimates of Arctic tern.

Table 2-20: Unapportioned density and population estimate of all Arctic tern in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>Not recorded</i>						
<b>Caledonia South (+2km)</b>						
May-21	6	35	6	98	0.10	0.41
Aug-22	5	29	5	69	0.08	0.45
<b>Caledonia South (+4km)</b>						
May-21	6	35	6	99	0.07	0.41
Aug-22	6	34	6	75	0.06	0.41



Table 2-21: Apportioned density and population estimate of all Arctic tern in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
<i>Not recorded</i>				
<b>Caledonia South (+2km)</b>				
May-21	58	29	161	0.16
Aug-22	52	28	126	0.14
<b>Caledonia South (+4km)</b>				
May-21	58	10	162	0.11
Aug-22	74	13	155	0.14

## 2.4 Stercorariidae

### 2.4.1 Great skua

2.4.1.1 The density and population estimates of great skua in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-22 and Table 2-23.

2.4.1.2 Table 2-22 includes the unapportioned density and population estimates of great skua, and Table 2-23 includes the apportioned density and population estimates of great skua.

Table 2-22: Unapportioned density and population estimate of all great skua in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jul-21	3	18	3	53	0.09	0.58
Aug-21	1	6	1	17	0.03	1.00
Jul-22	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Jun-21	1	6	1	17	0.02	1.00
Jul-21	5	29	5	87	0.08	0.45
Aug-21	2	11	2	29	0.03	0.71
Jul-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Jun-21	2	12	2	29	0.02	0.71
Jul-21	5	30	5	90	0.06	0.45
Aug-21	2	12	2	29	0.02	0.71
Sep-21	1	6	1	17	0.01	1.00
Jul-22	1	6	1	17	0.01	1.00

Table 2-23: Apportioned density and population estimate of all great skua in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jul-21	18	3	53	0.09
Aug-21	6	1	17	0.03
Jul-22	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Jun-21	6	1	17	0.02
Jul-21	29	5	87	0.08
Aug-21	11	2	29	0.03
Jul-22	6	1	17	0.02
<b>Caledonia South (+4km)</b>				
Jun-21	12	2	34	0.02
Jul-21	30	5	90	0.06
Aug-21	12	2	29	0.02
Sep-21	6	1	17	0.01
Jul-22	6	1	17	0.01

## 2.4.2 Arctic skua

2.4.2.1 The density and population estimates of Arctic skua in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-24 and Table 2-25.

2.4.2.2 Table 2-24 includes the unapportioned density and population estimates of Arctic skua, and Table 2-25 includes the apportioned density and population estimates of Arctic skua.

Table 2-24: Unapportioned density and population estimate of all Arctic skua in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
Aug-22	2	11	2	29	0.71	0.03
<b>Caledonia South (+4km)</b>						
Aug-22	2	11	2	29	0.71	0.02

Table 2-25: Apportioned density and population estimate of all Arctic skua in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
<i>None recorded</i>				
<b>Caledonia South (+2km)</b>				
Aug-22	11	2	29	0.03
<b>Caledonia South (+4km)</b>				
Aug-22	11	2	29	0.02

## 2.5 Alcidae

### 2.5.1 Unidentified species

#### Unidentified guillemot and/or razorbill

2.5.1.1 The density and population estimates of unidentified guillemot and/or razorbill species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-26.

Table 2-26: Density and population estimate of all unidentified guillemot and/or razorbill in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
May-21	40	233	47	489	1.11	0.16
Jun-21	86	500	227	855	2.38	0.11
Jul-21	22	129	22	246	0.61	0.21
Aug-21	57	329	75	756	1.56	0.13
Sep-21	46	267	186	360	1.27	0.15
Oct-21	15	88	41	141	0.42	0.26
Nov-21	11	63	35	104	0.30	0.30
Dec-21	47	273	157	435	1.30	0.15
Jan-22	13	75	40	116	0.36	0.28
Feb-22	51	276	189	400	1.31	0.14
Mar-22	17	91	43	140	0.43	0.24
Apr-22	18	104	75	138	0.49	0.24
May-22	72	416	243	629	1.98	0.12
Jun-22	18	104	41	168	0.49	0.24
Jul-22	52	303	52	671	1.44	0.14
Aug-22	6	35	6	69	0.17	0.41
Sep-22	55	321	187	449	1.53	0.13

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	29	170	29	476	0.81	0.19
Nov-22	7	41	7	88	0.19	0.38
Dec-22	6	35	12	59	0.17	0.41
Jan-23	2	12	2	29	0.06	0.71
Feb-23	14	80	17	160	0.38	0.27
Mar-23	9	52	12	104	0.25	0.33
Apr-23	15	85	15	233	0.40	0.26
<b>Caledonia South (+2km)</b>						
May-21	92	532	191	1,057	1.48	0.10
Jun-21	209	1,212	534	2,012	3.37	0.07
Jul-21	45	262	81	500	0.73	0.15
Aug-21	128	734	287	1,496	2.04	0.09
Sep-21	81	468	324	647	1.30	0.11
Oct-21	39	226	104	360	0.63	0.16
Nov-21	14	80	40	137	0.22	0.27
Dec-21	90	519	363	686	1.44	0.11
Jan-22	19	109	46	184	0.30	0.23
Feb-22	89	475	342	620	1.32	0.11
Mar-22	29	153	101	201	0.43	0.19
Apr-22	30	172	80	269	0.48	0.18
May-22	94	539	316	820	1.50	0.10
Jun-22	24	136	68	216	0.38	0.20
Jul-22	119	689	249	1,180	1.92	0.09
Aug-22	10	57	23	97	0.16	0.32
Sep-22	120	685	491	880	1.91	0.09

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	56	323	56	708	0.90	0.13
Nov-22	10	58	17	111	0.16	0.32
Dec-22	9	52	35	69	0.14	0.33
Jan-23	3	17	6	34	0.05	0.58
Feb-23	19	108	40	200	0.30	0.23
Mar-23	22	127	75	190	0.35	0.21
Apr-23	18	101	18	252	0.28	0.24
<b>Caledonia South (+4km)</b>						
May-21	125	725	319	1,300	1.36	0.09
Jun-21	354	2,058	965	3,482	3.86	0.05
Jul-21	59	354	150	619	0.66	0.13
Aug-21	376	2,163	742	3,779	4.06	0.05
Sep-21	136	790	476	1,254	1.48	0.09
Oct-21	71	412	180	697	0.77	0.12
Nov-21	27	155	92	241	0.29	0.19
Dec-21	150	868	642	1,099	1.63	0.08
Jan-22	25	144	81	225	0.27	0.20
Feb-22	121	657	445	858	1.23	0.09
Mar-22	38	204	140	274	0.38	0.16
Apr-22	45	258	109	407	0.48	0.15
May-22	151	868	500	1,305	1.63	0.08
Jun-22	34	197	87	324	0.37	0.17
Jul-22	183	1,060	463	1,737	1.99	0.07
Aug-22	20	115	46	201	0.22	0.22
Sep-22	170	992	683	1,278	1.86	0.08

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	57	335	57	758	0.63	0.13
Nov-22	26	152	82	234	0.28	0.20
Dec-22	11	65	41	94	0.12	0.30
Jan-23	4	23	6	41	0.04	0.50
Feb-23	28	162	87	265	0.30	0.19
Mar-23	29	169	93	245	0.32	0.19
Apr-23	21	120	29	280	0.22	0.22



## Unidentified auk species

2.5.1.2 The density and population estimates of unidentified auk species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-27.

Table 2-27: Density and population estimate of all unidentified auk species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jun-21	2	12	2	29	0.06	0.71
Jul-21	11	65	23	111	0.31	0.30
Aug-21	46	266	58	577	1.26	0.15
Sep-21	2	12	2	29	0.06	0.71
Oct-21	8	47	12	100	0.22	0.35
Mar-22	2	11	2	32	0.05	0.71
Apr-22	4	23	4	46	0.11	0.50
May-22	6	35	12	69	0.17	0.41
Jun-22	3	17	3	41	0.08	0.58
Jul-22	7	41	12	76	0.19	0.38
Aug-22	3	17	3	40	0.08	0.58
Sep-22	9	52	9	111	0.25	0.33
Nov-22	1	6	1	18	0.03	1.00
Dec-22	1	6	1	18	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
May-21	2	12	2	35	0.03	0.71
Jun-21	5	29	5	70	0.08	0.45
Jul-21	29	169	81	273	0.47	0.19

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Aug-21	84	482	161	912	1.34	0.11
Sep-21	4	23	6	40	0.06	0.50
Oct-21	10	58	12	110	0.16	0.32
Mar-22	2	11	2	32	0.03	0.71
Apr-22	7	40	11	86	0.11	0.38
May-22	8	46	11	86	0.13	0.35
Jun-22	5	28	5	74	0.08	0.45
Jul-22	11	64	29	104	0.18	0.30
Aug-22	7	40	11	69	0.11	0.38
Sep-22	22	126	51	211	0.35	0.21
Nov-22	1	6	1	17	0.02	1.00
Dec-22	1	6	1	17	0.02	1.00
Mar-23	1	6	1	17	0.02	1.00
Apr-23	3	17	3	45	0.05	0.58
<b>Caledonia South (+4km)</b>						
May-21	3	17	3	41	0.03	0.58
Jun-21	8	46	8	99	0.09	0.35
Jul-21	37	222	120	336	0.42	0.16
Aug-21	183	1,053	299	1,869	1.97	0.07
Sep-21	7	41	7	93	0.08	0.38
Oct-21	12	70	23	122	0.13	0.29
Mar-22	2	11	2	32	0.02	0.71
Apr-22	13	75	23	138	0.14	0.28
May-22	10	57	23	98	0.11	0.32
Jun-22	7	41	7	98	0.08	0.38

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jul-22	13	75	35	122	0.14	0.28
Aug-22	7	40	11	75	0.07	0.38
Sep-22	29	169	88	251	0.32	0.19
Oct-22	2	12	2	35	0.02	0.71
Nov-22	2	12	2	29	0.02	0.71
Dec-22	1	6	1	18	0.01	1.00
Feb-23	1	6	1	17	0.01	1.00
Mar-23	3	17	3	35	0.03	0.58
Apr-23	4	23	4	52	0.04	0.50

## Unidentified auk and/or shearwater species

2.5.1.3 The density and population estimates of unidentified auk and/or shearwater species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-28.

Table 2-28: Density and population estimate of all unidentified auk and/or shearwater species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
May-21	2	12	2	35	0.06	0.71
Jun-21	2	12	2	35	0.06	0.71
Jul-21	4	23	4	65	0.11	0.50
May-22	2	12	2	23	0.06	0.71
Jun-22	1	6	1	17	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Jun-21	4	23	4	64	0.06	0.50
Jul-21	13	75	13	168	0.21	0.28
Aug-21	9	52	9	128	0.14	0.33
May-22	3	17	3	34	0.05	0.58
Jun-22	3	17	3	40	0.05	0.58
Sep-22	73	417	73	1,251	1.16	0.12
Mar-23	1	6	1	17	0.02	1.00
Apr-23	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
May-21	5	29	5	87	0.05	0.45
Jun-21	14	81	14	174	0.15	0.27
Jul-21	10	60	12	132	0.11	0.32
May-22	3	17	3	34	0.03	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-22	4	23	4	46	0.04	0.50
Sep-22	73	426	73	1,278	0.80	0.12
Mar-23	2	12	2	29	0.02	0.71
Apr-23	1	6	1	17	0.01	1.00

## 2.5.2 Common guillemot

- 2.5.2.1 The density and population estimates of common guillemot in Caledonia South (plus the 2km buffer and plus the 4km buffer), calculated using model-based analysis have been presented in Table 2-29 and Table 2-30.
- 2.5.2.2 Table 2-29 presents the density and population estimates of common guillemot in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis. Only the apportioned density and abundance estimates for guillemot are presented, as the data approach uses model-based estimates.
- 2.5.2.3 The availability bias-corrected density and population estimate of all common guillemot in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) has also been included in Table 2-30.

Table 2-29: Apportioned density and population estimate of all common guillemot in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis. Not corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	3,666	2,553	5,307	18.36
Jun-21	1,978	1,414	2,786	10.32
Jul-21	6,671	3,180	15,095	31.54
Aug-21	714	452	1,130	3.87
Sep-21	1,446	869	2,360	7.46
Oct-21	656	444	981	3.28
Nov-21	600	411	878	3.07
Dec-21	307	206	453	1.51
Jan-22	196	128	299	0.97
Feb-22	398	268	589	2.03
Mar-22	236	147	372	1.21
Apr-22	677	462	1,021	3.35
May-22	3,106	2,256	4,316	15.95
Jun-22	3,828	2,502	6,044	19.14
Jul-22	3,679	2,545	5,314	19.80
Aug-22	183	113	302	0.99
Sep-22	2,540	1,384	4,803	14.90
Oct-22	234	125	456	1.20
Nov-22	40	21	79	0.20
Dec-22	120	87	170	0.60
Jan-23	209	141	312	1.07
Feb-23	801	550	1,177	3.98
Mar-23	1,125	768	1,632	5.41

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	848	395	2,033	4.27
<b>Caledonia South (+2km)</b>				
May-21	6,653	4,529	10,022	18.90
Jun-21	3,957	2,755	5,762	11.63
Jul-21	10,262	5,102	22,393	28.02
Aug-21	1,572	988	2,526	4.76
Sep-21	2,812	1,668	4,762	8.18
Oct-21	1,205	787	1,897	3.41
Nov-21	1,157	780	1,734	3.36
Dec-21	539	356	811	1.53
Jan-22	347	218	556	0.98
Feb-22	762	504	1,163	2.21
Mar-22	454	277	737	1.32
Apr-22	1,220	808	1,913	3.48
May-22	6,181	4,375	8,961	17.93
Jun-22	6,931	4,435	11,221	19.71
Jul-22	8,001	5,575	11,561	24.03
Aug-22	414	256	678	1.27
Sep-22	6,523	3,452	12,462	20.15
Oct-22	455	240	896	1.32
Nov-22	76	39	155	0.22
Dec-22	217	155	312	0.63
Jan-23	404	267	621	1.17
Feb-23	1,414	957	2,122	4.02
Mar-23	1,831	1,239	2,696	5.08
Apr-23	1,597	691	4,326	4.53

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+4km)</b>				
May-21	9,644	6,493	14,720	18.12
Jun-21	6,329	4,324	9,390	12.08
Jul-21	13,317	6,962	27,571	24.53
Aug-21	2,745	1,689	4,501	5.32
Sep-21	4,371	2,577	7,509	8.32
Oct-21	1,756	1,134	2,790	3.32
Nov-21	1,792	1,199	2,692	3.42
Dec-21	801	526	1,212	1.52
Jan-22	497	306	809	0.94
Feb-22	1,180	770	1,821	2.25
Mar-22	704	426	1,153	1.34
Apr-22	1,814	1,185	2,870	3.46
May-22	9,705	6,818	14,146	18.74
Jun-22	10,123	6,460	16,272	19.11
Jul-22	13,624	9,503	19,636	26.31
Aug-22	753	464	1,229	1.47
Sep-22	11,782	6,195	22,522	22.79
Oct-22	707	370	1,392	1.35
Nov-22	118	61	240	0.23
Dec-22	335	237	483	0.64
Jan-23	620	406	957	1.18
Feb-23	2,051	1,378	3,097	3.86
Mar-23	2,494	1,683	3,688	4.64
Apr-23	2,344	1,002	6,345	4.45



Table 2-30: Availability bias-corrected density and population estimate of all common guillemot in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	4,545	3,166	6,581	22.77
Jun-21	2,453	1,753	3,455	12.79
Jul-21	8,272	3,943	18,718	39.11
Aug-21	885	560	1,402	4.80
Sep-21	1,792	1,077	2,926	9.25
Oct-21	814	551	1,217	4.06
Nov-21	745	510	1,088	3.81
Dec-21	381	255	562	1.87
Jan-22	243	158	371	1.20
Feb-22	493	333	731	2.52
Mar-22	292	182	462	1.50
Apr-22	840	572	1,265	4.15
May-22	3,852	2,798	5,352	19.78
Jun-22	4,746	3,103	7,495	23.73
Jul-22	4,562	3,155	6,590	24.56
Aug-22	227	140	375	1.23
Sep-22	3,149	1,716	5,956	18.47
Oct-22	290	155	566	1.49
Nov-22	49	26	98	0.25
Dec-22	149	108	211	0.74
Jan-23	260	175	386	1.33
Feb-23	993	683	1,460	4.93
Mar-23	1,395	952	2,023	6.70

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	1,052	489	2,520	5.29
<b>Caledonia South (+2km)</b>				
May-21	8,250	5,616	12,428	23.43
Jun-21	4,907	3,416	7,145	14.42
Jul-21	12,725	6,326	27,767	34.75
Aug-21	1,950	1,225	3,132	5.91
Sep-21	3,487	2,069	5,905	10.14
Oct-21	1,494	976	2,352	4.23
Nov-21	1,435	967	2,150	4.16
Dec-21	668	442	1,005	1.90
Jan-22	431	271	689	1.21
Feb-22	945	625	1,442	2.74
Mar-22	562	344	914	1.63
Apr-22	1,513	1,001	2,373	4.31
May-22	7,664	5,425	11,112	22.24
Jun-22	8,594	5,499	13,914	24.44
Jul-22	9,921	6,913	14,336	29.80
Aug-22	514	318	841	1.57
Sep-22	8,088	4,280	15,452	24.99
Oct-22	564	297	1,111	1.64
Nov-22	95	49	192	0.27
Dec-22	270	192	387	0.78
Jan-23	501	331	771	1.45
Feb-23	1,754	1,186	2,631	4.98
Mar-23	2,271	1,537	3,343	6.30
Apr-23	1,980	857	5,364	5.62

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+4km)</b>				
May-21	11,959	8,051	18,252	22.47
Jun-21	7,848	5,361	11,643	14.98
Jul-21	16,513	8,633	34,189	30.42
Aug-21	3,403	2,095	5,581	6.59
Sep-21	5,421	3,195	9,312	10.31
Oct-21	2,177	1,406	3,459	4.12
Nov-21	2,222	1,487	3,338	4.24
Dec-21	993	652	1,503	1.89
Jan-22	617	380	1,003	1.16
Feb-22	1,463	955	2,258	2.79
Mar-22	872	528	1,430	1.66
Apr-22	2,249	1,470	3,558	4.29
May-22	12,034	8,454	17,541	23.24
Jun-22	12,553	8,011	20,177	23.70
Jul-22	16,894	11,784	24,349	32.63
Aug-22	934	575	1,524	1.83
Sep-22	14,610	7,682	27,928	28.26
Oct-22	877	458	1,726	1.67
Nov-22	147	75	298	0.28
Dec-22	415	294	599	0.79
Jan-23	769	504	1,187	1.46
Feb-23	2,544	1,709	3,840	4.78
Mar-23	3,092	2,086	4,574	5.75
Apr-23	2,906	1,243	7,868	5.52

## 2.5.3 Razorbill

- 2.5.3.1 The density and population estimates of razorbill in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using model-based analysis for the breeding season (April to mid-August) and design-based analysis for the non-breeding season (Mid-August to March) have been presented in Table 2-31 and Table 2-32.
- 2.5.3.2 Table 2-31 presents the density and population estimates of razorbill in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis. Only the apportioned density and abundance estimates for razorbill are presented, as the data approach relies on both design- and model-based estimates.
- 2.5.3.3 The availability bias-corrected density and population estimate of all razorbill in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) has also been included in Table 2-32.

Table 2-31: Apportioned density and population estimate of all razorbill in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis for the breeding season (April to mid-August) and design-based analysis for the non-breeding season (Mid-August to March). Not correct for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	246	156	387	1.23
Jun-21	220	107	453	1.11
Jul-21	585	343	1054	2.85
Aug-21	128	80	202	0.64
Sep-21	100	42	161	0.47
Oct-21	36	13	53	0.17
Dec-21	106	40	207	0.50
Jan-22	23	5	52	0.11
Feb-22	81	31	138	0.38
Mar-22	17	4	55	0.08
Apr-22	212	129	351	1.06
May-22	473	295	767	2.37
Jun-22	39	24	62	0.20
Jul-22	226	130	401	1.14
Aug-22	100	54	185	0.50
Sep-22	529	288	774	2.51
Nov-22	43	7	105	0.21
Dec-22	23	4	54	0.11
Jan-23	42	7	80	0.20
Feb-23	153	71	264	0.73
Mar-23	182	92	288	0.87
Apr-23	222	82	604	1.08

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+2km)</b>				
May-21	452	279	744	1.30
Jun-21	410	195	873	1.18
Jul-21	995	576	1,834	2.79
Aug-21	239	145	388	0.69
Sep-21	266	174	385	0.74
Oct-21	59	36	95	0.16
Dec-21	193	176	250	0.54
Jan-22	45	22	84	0.13
Feb-22	199	157	266	0.55
Mar-22	38	21	79	0.11
Apr-22	390	235	659	1.12
May-22	880	538	1,465	2.53
Jun-22	73	45	118	0.21
Jul-22	421	237	769	1.21
Aug-22	185	98	352	0.53
Sep-22	1,067	803	1,382	2.96
Oct-22	6	1	18	0.02
Nov-22	78	49	168	0.22
Dec-22	56	22	99	0.16
Jan-23	65	13	132	0.18
Feb-23	207	105	350	0.57
Mar-23	219	102	367	0.61
Apr-23	378	131	1194	1.05

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+4km)</b>				
May-21	452	279	744	1.30
Jun-21	410	195	873	1.18
Jul-21	995	576	1,834	2.79
Aug-21	239	145	388	0.69
Sep-21	457	278	689	0.86
Oct-21	73	41	105	0.14
Dec-21	258	176	316	0.48
Jan-22	52	16	98	0.10
Feb-22	277	183	373	0.52
Mar-22	51	11	121	0.10
Apr-22	390	235	659	1.12
May-22	880	538	1465	2.53
Jun-22	73	45	118	0.21
Jul-22	421	237	769	1.21
Aug-22	185	98	352	0.53
Sep-22	1,586	1,254	1,983	2.97
Oct-22	6	1	19	0.01
Nov-22	159	54	274	0.30
Dec-22	70	28	120	0.13
Jan-23	84	29	152	0.16
Feb-23	337	190	512	0.63
Mar-23	360	185	534	0.67
Apr-23	520	179	1,620	0.97

Table 2-32: Availability bias-corrected density and population estimate of all razorbill in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis for the breeding season (April to mid-August) and design-based analysis for the non-breeding season (Mid-August to March).

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	288	183	453	1.44
Jun-21	242	118	497	1.21
Jul-21	680	399	1,225	3.32
Aug-21	150	93	237	0.75
Sep-21	119	50	192	0.57
Oct-21	43	16	64	0.20
Dec-21	128	48	250	0.61
Jan-22	27	6	63	0.13
Feb-22	98	38	167	0.47
Mar-22	20	4	63	0.09
Apr-22	233	142	385	1.16
May-22	550	342	890	2.76
Jun-22	43	27	68	0.22
Jul-22	259	150	460	1.30
Aug-22	117	64	216	0.59
Sep-22	639	348	932	3.04
Nov-22	52	9	127	0.25
Dec-22	28	5	66	0.13
Jan-23	51	9	96	0.24
Feb-23	184	86	315	0.87
Mar-23	217	110	340	1.03
Apr-23	233	86	635	1.13



Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+2km)</b>				
May-21	529	326	871	1.52
Jun-21	450	214	958	1.29
Jul-21	1,156	669	2,132	3.24
Aug-21	279	170	454	0.80
Sep-21	320	210	461	0.89
Oct-21	72	44	115	0.20
Dec-21	233	213	302	0.65
Jan-22	55	27	102	0.15
Feb-22	241	190	322	0.67
Mar-22	45	25	92	0.13
Apr-22	428	258	725	1.23
May-22	1,022	625	1,702	2.94
Jun-22	80	49	130	0.23
Jul-22	483	272	881	1.39
Aug-22	216	115	412	0.62
Sep-22	1,286	970	1,659	3.57
Oct-22	8	1	22	0.02
Nov-22	95	59	203	0.26
Dec-22	68	26	120	0.19
Jan-23	78	15	160	0.22
Feb-23	249	127	420	0.69
Mar-23	261	122	435	0.73
Apr-23	398	138	1,256	1.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+4km)</b>				
May-21	804	488	1,343	1.53
Jun-21	689	322	1,495	1.32
Jul-21	1,612	947	2,919	3.01
Aug-21	428	258	701	0.82
Sep-21	552	337	830	1.03
Oct-21	88	50	128	0.16
Dec-21	312	213	383	0.58
Jan-22	64	19	119	0.12
Feb-22	335	222	452	0.63
Mar-22	60	13	143	0.11
Apr-22	649	388	1,100	1.23
May-22	1,566	947	2,627	2.99
Jun-22	123	75	201	0.23
Jul-22	740	413	1,357	1.41
Aug-22	331	175	634	0.63
Sep-22	1,915	1,517	2,384	3.59
Oct-22	8	1	23	0.01
Nov-22	192	65	332	0.36
Dec-22	85	34	146	0.16
Jan-23	102	35	184	0.19
Feb-23	405	230	614	0.76
Mar-23	425	222	627	0.80
Apr-23	547	188	1,704	1.03

## 2.5.4 Puffin

- 2.5.4.1 The density and population estimates of puffin in Caledonia South (plus the 2km buffer and plus the 4km buffer), calculated using model-based analysis for the breeding season (April to mid-August) and design-based analysis for the non-breeding season (Mid-August to March) have been presented in Table 2-33 and Table 2-34
- 2.5.4.2 Table 2-33 presents the density and population estimates of puffin in Caledonia South (plus the 2km buffer and plus the 4km buffer), calculated using design-based analysis. Only the apportioned density and abundance estimates for puffin are presented, as the data approach relies on both design- and model-based estimates.
- 2.5.4.3 The availability bias-corrected density and population estimate of all puffin in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) has also been included in Table 2-34.

Table 2-33: Apportioned density and population estimate of all puffin in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Not corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	109	65	181	0.55
Jun-21	135	75	249	0.67
Jul-21	206	119	362	1.01
Aug-21	822	491	1,404	4.24
Sep-21	47	23	77	0.22
Oct-21	120	42	203	0.57
Apr-22	238	133	424	1.18
May-22	317	209	484	1.57
Jun-22	37	21	67	0.18
Jul-22	63	32	121	0.31
Aug-22	222	122	396	1.10
Sep-22	628	336	1,015	2.99
Feb-23	11	2	23	0.05

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Mar-23	17	3	35	0.08
Apr-23	23	6	46	0.11
<b>Caledonia South (+2km)</b>				
May-21	204	121	343	0.60
Jun-21	241	132	451	0.69
Jul-21	350	203	618	0.99
Aug-21	1,555	956	2,595	4.50
Sep-21	76	36	122	0.21
Oct-21	154	79	252	0.43
Mar-22	12	3	36	0.03
Apr-22	428	236	776	1.24
May-22	565	366	875	1.63
Jun-22	66	36	125	0.19
Jul-22	109	55	217	0.31
Aug-22	399	214	729	1.16
Sep-22	1,167	838	1,591	3.24
Feb-23	23	4	51	0.06
Mar-23	29	5	64	0.08
Apr-23	34	6	63	0.10
<b>Caledonia South (+4km)</b>				
May-21	338	199	575	0.66
Jun-21	378	205	719	0.73
Jul-21	517	297	922	0.98
Aug-21	2,431	1,527	3,968	4.64
Sep-21	123	70	188	0.23

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-21	188	83	314	0.35
Mar-22	11	2	34	0.02
Apr-22	674	369	1,235	1.30
May-22	885	567	1386	1.70
Jun-22	106	56	206	0.21
Jul-22	166	82	335	0.32
Aug-22	639	336	1,189	1.24
Sep-22	1,717	1,216	2,295	3.22
Oct-22	6	1	19	0.01
Feb-23	23	4	52	0.04
Mar-23	53	23	89	0.10
Apr-23	34	6	70	0.06

Table 2-34: Availability bias-corrected density and population estimate of all puffin in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using model-based analysis for the breeding season (April to mid-August) and design-based analysis for the non-breeding season (Mid-August to March).

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	130	75	177	0.62
Jun-21	212	82	373	1.01
Jul-21	235	69	415	1.12
Aug-21	1,424	576	2,491	6.77
Sep-21	54	27	89	0.26
Oct-21	140	49	236	0.66
Apr-22	271	102	454	1.29
May-22	428	250	594	2.04
Jun-22	41	7	109	0.19
Jul-22	116	56	182	0.55
Aug-22	338	177	509	1.61
Sep-22	730	391	1,177	3.47
Feb-23	13	2	27	0.06
Mar-23	20	3	41	0.09
Apr-23	27	7	54	0.13
<b>Caledonia South (+2km)</b>				
May-21	304	197	435	0.85
Jun-21	331	134	584	0.92
Jul-21	421	207	694	1.17
Aug-21	2,093	1,418	3,420	5.82
Sep-21	88	41	142	0.24
Oct-21	179	92	293	0.50

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Mar-22	14	3	42	0.04
Apr-22	502	222	814	1.40
May-22	634	353	900	1.76
Jun-22	80	20	154	0.22
Jul-22	128	63	208	0.36
Aug-22	581	334	866	1.62
Sep-22	1,358	976	1,848	3.77
Feb-23	27	5	59	0.07
Mar-23	34	6	75	0.09
Apr-23	40	7	73	0.11
<b>Caledonia South (+4km)</b>				
May-21	414	244	628	0.78
Jun-21	522	251	854	0.98
Jul-21	626	417	895	1.17
Aug-21	2,981	1,678	4,614	5.59
Sep-21	143	82	219	0.27
Oct-21	219	97	366	0.41
Mar-22	13	2	40	0.02
Apr-22	805	400	1,286	1.51
May-22	1,004	599	1,427	1.88
Jun-22	122	48	218	0.23
Jul-22	196	123	275	0.37
Aug-22	857	452	1,319	1.61
Sep-22	1,996	1,416	2,662	3.74
Oct-22	7	1	22	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Feb-23	27	5	61	0.05
Mar-23	61	27	103	0.11
Apr-23	40	7	82	0.08

## 2.5.5 Black guillemot

2.5.5.1 The density and population estimates of black guillemot in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-35 and Table 2-36.

2.5.5.2 Table 2-35 includes the unapportioned density and population estimates of black guillemot, and Table 2-36 includes the apportioned density and population estimates of black guillemot.

Table 2-35: Unapportioned density and population estimate of all black guillemot in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Not corrected for availability bias.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jun-21	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Jun-21	1	6	1	17	0.02	1.00
Apr-22	1	6	1	17	0.02	1.00
Jun-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Jun-21	1	6	1	17	0.01	1.00
Apr-22	1	6	1	17	0.01	1.00
Jun-22	1	6	1	17	0.01	1.00



Table 2-36: Apportioned density and population estimate of all black guillemot in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Not corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jun-21	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Jun-21	6	1	18	0.02
Apr-22	6	1	18	0.02
Jun-22	6	1	17	0.02
<b>Caledonia South (+4km)</b>				
Jun-21	6	1	18	0.01
Apr-22	6	1	18	0.01
Jun-22	6	1	17	0.01

## 2.6 Gaviidae

### 2.6.1 Red-throated diver

2.6.1.1 The density and population estimates of red-throated diver in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-37 and Table 2-38.

2.6.1.2 Table 2-37 includes the unapportioned density and population estimates of red-throated diver, and Table 2-38 includes the apportioned density and population estimates of red-throated diver.

Table 2-37: Unapportioned density and population estimate of all red-throated diver in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Oct-22	1	6	1	18	0.03	1.00
<b>Caledonia South (+2km)</b>						
Oct-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Oct-22	1	6	1	18	0.01	1.00

Table 2-38: Apportioned density and population estimate of all red-throated diver in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Oct-22	6	1	18	0.03
<b>Caledonia South (+2km)</b>				
Oct-22	6	1	18	0.03
<b>Caledonia South (+4km)</b>				
Oct-22	6	1	18	0.01

## 2.6.2 Great northern diver

2.6.2.1 The density and population estimates of great northern diver in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-39 and Table 2-40.

2.6.2.2 Table 2-39 includes the unapportioned density and population estimates of great northern diver, and Table 2-40 includes the apportioned density and population estimates of great northern diver.

Table 2-39: Unapportioned density and population estimate of all great northern diver in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jun-21	1	6	1	17	0.03	1.00
Nov-21	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Jun-21	1	6	1	17	0.02	1.00
Nov-21	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Jun-21	1	6	1	17	0.01	1.00
Nov-21	1	6	1	17	0.01	1.00

Table 2-40: Apportioned density and population estimate of all great northern diver in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jun-21	6	1	17	0.03
Nov-21	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Jun-21	6	1	17	0.02
Nov-21	6	1	17	0.02
<b>Caledonia South (+4km)</b>				
Jun-21	6	1	17	0.01
Nov-21	6	1	17	0.01

## 2.7 Procellariidae

### 2.7.1 Unidentified species

#### Unidentified fulmar and/or gull species

2.7.1.1 The density and population estimates of unidentified fulmar and/or gull species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-41.

Table 2-41: Density and population estimate of all unidentified fulmar and/or gull species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Repeated from Table 2-6.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Nov-22	1	6	1	18	0.03	1.00
Mar-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Nov-22	1	6	1	17	0.02	1.00
Mar-23	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	17	0.01	1.00

### Unidentified small shearwater species

2.7.1.2 The density and population estimates of unidentified small shearwater species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-42.

Table 2-42: Density and population estimate of all unidentified small shearwater species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Aug-22	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
Aug-22	1	6	1	17	0.02	1.00
Sep-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Aug-22	1	6	1	17	0.01	1.00
Sep-22	1	6	1	18	0.01	1.00

## Unidentified shearwater species

2.7.1.3 The density and population estimates of unidentified shearwater species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-43.

Table 2-43: Density and population estimate of all unidentified shearwater species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
<i>None recorded</i>						
<b>Caledonia South (+2km)</b>						
Sep-22	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
Sep-22	1	6	1	18	0.01	1.00

## Unidentified auk and/or shearwater species

2.7.1.4 The density and population estimates of unidentified auk and/or shearwater species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-44.

Table 2-44: Density and population estimate of all unidentified auk and/or shearwater species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Repeated from Table 2-28.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
May-21	2	12	2	35	0.06	0.71
Jun-21	2	12	2	35	0.06	0.71
Jul-21	4	23	4	65	0.11	0.50
May-22	2	12	2	23	0.06	0.71
Jun-22	1	6	1	17	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
<b>Caledonia South (+2km)</b>						
May-21	4	23	4	64	0.06	0.50
Jun-21	13	75	13	168	0.21	0.28
Jul-21	9	52	9	128	0.14	0.33
May-22	3	17	3	34	0.05	0.58
Jun-22	3	17	3	40	0.05	0.58
Sep-22	73	417	73	1,251	1.16	0.12
Mar-23	1	6	1	17	0.02	1.00
Apr-23	1	6	1	17	0.02	1.00
<b>Caledonia South (+4km)</b>						
May-21	5	29	5	87	0.05	0.45
Jun-21	14	81	14	174	0.15	0.27
Jul-21	10	60	12	132	0.11	0.32

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
May-22	3	17	3	34	0.03	0.58
Jun-22	4	23	4	46	0.04	0.50
Sep-22	73	426	73	1,278	0.80	0.12
Mar-23	2	12	2	29	0.02	0.71
Apr-23	1	6	1	17	0.01	1.00

## 2.7.2 Fulmar

- 2.7.2.1 The density and population estimates of fulmar in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-45 and Table 2-46.
- 2.7.2.2 Table 2-45 includes the unapportioned density and population estimates of fulmar, and Table 2-46 includes the apportioned density and population estimates of fulmar.



Table 2-45: Unapportioned density and population estimate of all fulmar in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
May-21	18	105	52	157	0.50	0.24
Jun-21	19	111	64	157	0.53	0.23
Jul-21	388	2,275	388	5,953	10.82	0.05
Aug-21	69	398	312	473	1.89	0.12
Sep-21	26	151	87	209	0.72	0.20
Oct-21	2	12	2	29	0.06	0.71
Nov-21	112	645	112	1,722	3.07	0.09
Dec-21	46	267	174	342	1.27	0.15
Jan-22	13	75	40	116	0.36	0.28
Feb-22	24	130	54	222	0.62	0.20
Mar-22	2	11	2	32	0.05	0.71
Apr-22	39	225	39	495	1.07	0.16
May-22	10	58	17	110	0.28	0.32
Jun-22	52	301	156	486	1.43	0.14
Jul-22	526	3,068	1,342	5,191	14.59	0.04
Aug-22	19	109	69	150	0.52	0.23
Sep-22	7	41	12	76	0.19	0.38
Nov-22	57	334	293	381	1.59	0.13
Dec-22	19	112	47	189	0.53	0.23
Jan-23	5	29	12	41	0.14	0.45
Feb-23	9	51	17	91	0.24	0.33
Mar-23	25	145	81	214	0.69	0.20
Apr-23	8	46	11	80	0.22	0.35

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South (+2km)</b>						
May-21	36	208	150	260	0.58	0.17
Jun-21	40	232	151	313	0.65	0.16
Jul-21	535	3,113	593	7,639	8.66	0.04
Aug-21	124	711	562	837	1.98	0.09
Sep-21	43	249	173	324	0.69	0.15
Oct-21	6	35	6	70	0.10	0.41
Nov-21	127	727	127	1,826	2.02	0.09
Dec-21	77	444	340	553	1.24	0.11
Jan-22	23	132	69	195	0.37	0.21
Feb-22	39	208	117	320	0.58	0.16
Mar-22	6	32	6	63	0.09	0.41
Apr-22	48	275	74	520	0.77	0.14
May-22	27	155	63	287	0.43	0.19
Jun-22	77	437	250	664	1.22	0.11
Jul-22	888	5,138	2,291	8,615	14.29	0.03
Aug-22	40	229	166	309	0.64	0.16
Sep-22	26	149	74	246	0.41	0.20
Nov-22	104	606	530	670	1.69	0.10
Dec-22	32	185	121	277	0.51	0.18
Jan-23	12	69	40	98	0.19	0.29
Feb-23	13	74	29	120	0.21	0.28
Mar-23	42	242	132	334	0.67	0.15
Apr-23	12	67	34	101	0.19	0.29

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South (+4km)</b>						
May-21	46	267	186	342	0.50	0.15
Jun-21	75	436	314	593	0.82	0.12
Jul-21	673	4,042	1,051	8,804	7.58	0.04
Aug-21	178	1,024	765	1,237	1.92	0.07
Sep-21	96	557	412	714	1.04	0.10
Oct-21	11	64	12	128	0.12	0.30
Nov-21	136	782	161	1,880	1.47	0.09
Dec-21	125	723	521	920	1.36	0.09
Jan-22	31	179	92	265	0.34	0.18
Feb-22	56	304	190	440	0.57	0.13
Mar-22	10	54	27	91	0.10	0.32
Apr-22	56	321	109	590	0.60	0.13
May-22	31	178	86	310	0.33	0.18
Jun-22	109	631	405	886	1.18	0.10
Jul-22	1,441	8,343	3,300	14,144	15.64	0.03
Aug-22	76	436	310	585	0.82	0.11
Sep-22	38	222	117	344	0.42	0.16
Oct-22	4	23	4	59	0.04	0.50
Nov-22	140	819	602	988	1.54	0.08
Dec-22	52	306	194	460	0.57	0.14
Jan-23	36	211	135	304	0.40	0.17
Feb-23	22	127	69	196	0.24	0.21
Mar-23	54	315	181	455	0.59	0.14
Apr-23	15	86	40	137	0.16	0.26

Table 2-46: Apportioned density and population estimate of all fulmar in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
May-21	105	47	181	0.50
Jun-21	111	47	175	0.53
Jul-21	2,276	431	5,971	10.81
Aug-21	398	293	520	1.89
Sep-21	150	63	232	0.71
Oct-21	12	2	29	0.06
Nov-21	646	112	1,722	3.07
Dec-21	267	182	348	1.27
Jan-22	75	26	138	0.36
Feb-22	130	43	232	0.62
Mar-22	10	2	32	0.05
Apr-22	225	39	513	1.07
May-22	57	13	133	0.27
Jun-22	301	145	498	1.43
Jul-22	3,068	1,219	5,640	14.58
Aug-22	110	59	167	0.52
Sep-22	41	7	87	0.19
Nov-22	339	272	425	1.61
Dec-22	112	49	188	0.53
Jan-23	29	7	59	0.14
Feb-23	51	17	91	0.24
Mar-23	151	59	272	0.72
Apr-23	46	10	108	0.22

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+2km)</b>				
May-21	208	115	312	0.58
Jun-21	232	139	336	0.64
Jul-21	3,112	675	7,634	8.65
Aug-21	711	551	866	1.98
Sep-21	249	150	353	0.69
Oct-21	35	6	81	0.10
Nov-21	727	163	1,849	2.02
Dec-21	444	323	576	1.23
Jan-22	132	52	218	0.37
Feb-22	208	101	332	0.58
Mar-22	31	6	64	0.09
Apr-22	274	73	572	0.76
May-22	155	49	304	0.43
Jun-22	437	244	681	1.21
Jul-22	5,138	2,100	8,713	14.28
Aug-22	228	97	394	0.63
Sep-22	148	66	257	0.41
Nov-22	611	495	730	1.70
Dec-22	185	108	271	0.51
Jan-23	68	31	115	0.19
Feb-23	74	30	131	0.21
Mar-23	247	132	376	0.69
Apr-23	68	12	129	0.19

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South (+4km)</b>				
May-21	267	150	388	0.50
Jun-21	436	262	634	0.82
Jul-21	4,042	973	8,900	7.57
Aug-21	1,024	759	1,259	1.92
Sep-21	557	331	790	1.04
Oct-21	64	13	139	0.12
Nov-21	782	169	1,909	1.47
Dec-21	723	497	925	1.35
Jan-22	179	81	294	0.34
Feb-22	304	163	462	0.57
Mar-22	54	18	97	0.10
Apr-22	321	105	596	0.60
May-22	178	63	327	0.33
Jun-22	632	383	898	1.18
Jul-22	8,343	2,976	14,590	15.63
Aug-22	436	235	677	0.82
Sep-22	222	105	362	0.42
Oct-22	24	4	70	0.04
Nov-22	824	576	1,044	1.54
Dec-22	306	183	460	0.57
Jan-23	211	111	310	0.40
Feb-23	127	58	214	0.24
Mar-23	320	165	491	0.60
Apr-23	86	18	166	0.16

## 2.7.3 Sooty shearwater

2.7.3.1 The density and population estimates of sooty shearwater in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-47 and Table 2-48.

2.7.3.2 Table 2-47 includes the unapportioned density and population estimates of sooty shearwater, and Table 2-48 includes the apportioned density and population estimates of sooty shearwater.

Table 2-47: Unapportioned density and population estimate of all sooty shearwater in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Sep-21	1	6	1	17	1	0.03
<b>Caledonia South (+2km)</b>						
Sep-21	1	6	1	17	1	0.02
<b>Caledonia South (+4km)</b>						
Sep-21	1	6	1	17	1	0.01

Table 2-48: Apportioned density and population estimate of all sooty shearwater in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Sep-21	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Sep-21	6	1	17	0.02
<b>Caledonia South (+4km)</b>				
Sep-21	6	1	17	0.01

## 2.7.4 Manx shearwater

2.7.4.1 The density and population estimates of Manx shearwater in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-49 and Table 2-50.

2.7.4.2 Table 2-49 includes the unapportioned density and population estimates of Manx shearwater, and Table 2-50 includes the apportioned density and population estimates of Manx shearwater.

Table 2-49: Unapportioned density and population estimate of all Manx shearwater in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Jun-21	2	12	2	29	0.06	0.71
Jul-21	1	6	1	18	0.03	1.00
May-22	6	35	6	104	0.17	0.41
<b>Caledonia South (+2km)</b>						
Jun-21	9	52	9	122	0.14	0.33
Jul-21	2	12	2	29	0.03	0.71
May-22	6	34	6	103	0.09	0.41
<b>Caledonia South (+4km)</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	15	87	15	232	0.16	0.26
Jul-21	2	12	2	30	0.02	0.71
May-22	8	46	8	115	0.09	0.35



Table 2-50: Apportioned density and population estimate of all Manx shearwater in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia South</b>				
Jun-21	12	2	29	0.06
Jul-21	6	1	18	0.03
May-22	35	6	104	0.17
Aug-22	6	1	17	0.03
<b>Caledonia South (+2km)</b>				
Jun-21	54	10	149	0.15
Jul-21	12	2	29	0.03
May-22	34	6	103	0.09
Aug-22	6	6	17	0.02
<b>Caledonia South (+4km)</b>				
May-21	6	1	17	0.01
Jun-21	88	15	242	0.16
Jul-21	12	2	30	0.02
May-22	45	8	132	0.08
Aug-22	6	1	17	0.01

## 2.8 Sulidae

### 2.8.1 Gannet

2.8.1.1 The density and population estimates of gannet species in Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-51.

Table 2-51: Density and population estimate of all gannet in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
May-21	2	12	2	29	0.06	0.71
Jun-21	26	151	81	262	0.72	0.20
Jul-21	15	88	15	229	0.42	0.26
Aug-21	15	87	46	144	0.41	0.26
Sep-21	15	87	23	162	0.41	0.26
Oct-21	29	170	105	228	0.81	0.19
Nov-21	5	29	6	52	0.14	0.45
Dec-21	2	12	2	35	0.06	0.71
Jan-22	2	12	2	29	0.06	0.71
Feb-22	2	11	2	32	0.05	0.71
Mar-22	1	5	1	16	0.02	1.00
Apr-22	1	6	1	17	0.03	1.00
May-22	12	69	12	185	0.33	0.29
Jun-22	152	880	185	1,807	4.18	0.08
Jul-22	25	146	70	239	0.69	0.20
Aug-22	5	29	6	52	0.14	0.45
Sep-22	41	239	122	350	1.14	0.16
Oct-22	4	24	4	47	0.11	0.50
Nov-22	1	6	1	18	0.03	1.00
Dec-22	1	6	1	18	0.03	1.00
Jan-23	1	6	1	18	0.03	1.00
Feb-23	1	6	1	17	0.03	1.00
Apr-23	14	80	14	228	0.38	0.27

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South (+2km)</b>						
May-21	5	29	6	52	0.08	0.45
Jun-21	52	302	157	487	0.84	0.14
Jul-21	16	93	16	233	0.26	0.25
Aug-21	37	212	155	275	0.59	0.16
Sep-21	26	150	87	231	0.42	0.20
Oct-21	46	267	186	354	0.74	0.15
Nov-21	9	52	17	92	0.14	0.33
Dec-21	2	12	2	35	0.03	0.71
Jan-22	2	11	2	29	0.03	0.71
Feb-22	4	21	4	64	0.06	0.50
Mar-22	1	5	1	16	0.01	1.00
Apr-22	3	17	6	34	0.05	0.58
May-22	13	75	13	189	0.21	0.28
Jun-22	196	1,113	324	2,066	3.10	0.07
Jul-22	38	220	87	382	0.61	0.16
Aug-22	9	51	29	74	0.14	0.33
Sep-22	68	388	234	548	1.08	0.12
Oct-22	17	98	23	225	0.27	0.24
Nov-22	1	6	1	17	0.02	1.00
Dec-22	2	12	2	29	0.03	0.71
Jan-23	2	11	2	29	0.03	0.71
Feb-23	2	11	2	29	0.03	0.71
Mar-23	1	6	1	17	0.02	1.00
Apr-23	14	78	14	230	0.22	0.27

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South (+4km)</b>						
May-21	8	46	17	75	0.09	0.35
Jun-21	79	459	250	750	0.86	0.11
Jul-21	28	168	54	336	0.31	0.19
Aug-21	57	328	224	443	0.61	0.13
Sep-21	47	273	145	436	0.51	0.15
Oct-21	82	476	366	598	0.89	0.11
Nov-21	14	80	29	138	0.15	0.27
Dec-21	2	12	2	35	0.02	0.71
Jan-22	2	12	2	29	0.02	0.71
Feb-22	5	27	5	71	0.05	0.45
Mar-22	1	5	1	16	0.01	1.00
Apr-22	10	57	10	138	0.11	0.32
May-22	16	92	23	213	0.17	0.25
Jun-22	222	1,286	492	2,253	2.41	0.07
Jul-22	69	399	162	654	0.75	0.12
Aug-22	9	52	23	80	0.10	0.33
Sep-22	86	502	274	718	0.94	0.11
Oct-22	42	247	65	564	0.46	0.15
Nov-22	2	12	2	29	0.02	0.71
Dec-22	3	18	3	41	0.03	0.58
Jan-23	3	18	3	35	0.03	0.58
Feb-23	3	17	3	35	0.03	0.58
Mar-23	1	6	1	17	0.01	1.00
Apr-23	16	92	16	246	0.17	0.25

## 2.9 Turdidae

### 2.9.1 Unidentified thrush species

2.9.1.1 The density and population estimates of unidentified thrush species in the Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-52.

Table 2-52: Density and population estimate of all unidentified thrush species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Oct-22	13	76	13	217	0.36	0.28
<b>Caledonia South (+2km)</b>						
Oct-22	62	357	62	1,048	0.99	0.13
<b>Caledonia South (+4km)</b>						
Oct-22	188	1,104	188	2,350	2.07	0.07

## 2.10 Passeriformes

### 2.10.1 Unidentified passerine species

2.10.1.1 The density and population estimates of unidentified passerine species in the Caledonia South (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-53.

Table 2-53: Density and population estimate of all unidentified passerine species in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia South</b>						
Oct-22	2	12	2	35	0.06	0.71
<b>Caledonia South (+2km)</b>						
Oct-22	2	12	2	35	0.03	0.71
<b>Caledonia South (+4km)</b>						
Oct-22	37	217	37	441	0.41	0.16

### 3 References

<sup>1</sup> NatureScot (2023) 'Guidance Note 2: Guidance to support Offshore Wind Applications: Advice for Marine Ornithology Baseline Characterisation Surveys and Reporting'. Available at: <https://www.nature.scot/doc/guidance-note-2-guidance-support-offshore-wind-applications-advice-marine-ornithology-baseline> (Accessed 01/07/2024)

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