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Volume 7B Proposed Development (Offshore) Appendices

Appendix 6-1 Offshore Ornithology Baseline Characterisation Report Annex 9 Design-based Density and Abundance Estimates of Birds on Sea (Caledonia South)

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Volume 7B Appendix 6-1 Annex 9 Design-based Density and Abundance Estimates of Birds on Sea (Caledonia South)

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Acronyms and Abbreviations

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

1 Introduction

- 1.1.1.1 This annex provides the design-based density and abundance estimates for birds recorded and on sea in the Caledonia Offshore Wind Farm (OWF), specifically the Caledonia South Site, and relevant buffers (2km and 4km). The tables below provide both the unapportioned, and apportioned estimates, with an availability bias correction factor applied to the relevant species (common guillemot *Uria aalge*, razorbill *Alca torda* and puffin *Fratercula arctica*).
- 1.1.1.2 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/km²) and the Coefficient of Variation (CV) as a measure of precision.
- 1.1.1.3 As per the NatureScot guidance (NatureScot, 2023¹), 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 No unidentified wader species on sea were recorded in Caledonia South.

2.1.2 Pink-footed goose

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

2.1.3 Mallard

2.1.3.1 No mallard on sea were recorded in Caledonia South.

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 2-1.

Table 2-1: Density and population estimate of unidentified black-backed gull species on sea 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		
Caledonia South						
Nov-21	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Nov-21	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
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 2-2.

Table 2-2: Density and population estimate of unidentified large gull species on sea 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		
Caledonia South						
Nov-21	5	29	5	75	0.14	0.45
Mar-22	1	5	1	16	0.02	1.00
Jul-22	8	47	8	134	0.22	0.35
Apr-23	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Oct-21	1	6	1	17	0.02	1.00
Nov-21	8	46	8	103	0.13	0.35
Mar-22	1	5	1	16	0.01	1.00
Jul-22	10	58	10	162	0.16	0.32
Apr-23	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
Jul-21	1	6	1	18	0.01	1.00
Oct-21	1	6	1	17	0.01	1.00
Nov-21	12	69	23	126	0.13	0.29
Mar-22	1	5	1	16	0.01	1.00
Jul-22	12	69	12	203	0.13	0.29
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 2-3.

Table 2-3: Density and population estimate of unidentified gull species on sea 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		
Caledonia South						
Aug-22	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Aug-22	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
Aug-21	1	6	1	17	0.01	1.00
Aug-22	1	6	1	17	0.01	1.00

Unidentified fulmar and/or gull species

2.2.1.4 No unidentified fulmar and/or gull species on sea were recorded in Caledonia South.

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 design-based analysis) have been presented in Table 2-4 and Table 2-5.

2.2.2.2 Table 2-4 includes the unapportioned density and population estimates of kittiwake, and Table 2-5 includes the apportioned density and population estimates of kittiwake.

Table 2-4: Unapportioned density and population estimate of kittiwake on sea 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		
Caledonia South						
May-21	69	402	69	1,193	1.91	0.12
Jun-21	99	576	99	1,675	2.74	0.10
Jul-21	167	979	167	2,346	4.66	0.08
Aug-21	2	12	2	29	0.06	0.71
Sep-21	1	6	1	17	0.03	1.00
Oct-21	3	18	3	41	0.09	0.58
Nov-21	2	12	2	35	0.06	0.71
Dec-21	1	6	1	17	0.03	1.00
Feb-22	3	16	5	32	0.08	0.58
May-22	110	635	110	1,617	3.02	0.10
Jun-22	178	1,031	237	2,039	4.90	0.07
Jul-22	61	356	61	1,067	1.69	0.13
Sep-22	5	29	5	76	0.14	0.45
Oct-22	2	12	2	35	0.06	0.71
Nov-22	2	12	2	35	0.06	0.71
Feb-23	2	11	2	23	0.05	0.71
Mar-23	2	12	2	29	0.06	0.71
Apr-23	34	193	34	557	0.92	0.17
Caledonia South (+2km)						
May-21	73	422	73	1,225	1.17	0.12
Jun-21	114	661	114	1,751	1.84	0.09
Jul-21	304	1,769	304	3,823	4.92	0.06
Aug-21	7	40	11	69	0.11	0.38

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-21	77	445	77	1,312	1.24	0.11
Oct-21	3	17	3	46	0.05	0.58
Nov-21	3	17	3	52	0.05	0.58
Dec-21	1	6	1	17	0.02	1.00
Feb-22	3	16	3	32	0.04	0.58
Mar-22	1	5	1	16	0.01	1.00
Apr-22	40	229	40	681	0.64	0.16
May-22	148	849	148	1,968	2.36	0.08
Jun-22	307	1,743	352	3,259	4.85	0.06
Jul-22	96	555	96	1,400	1.54	0.10
Sep-22	11	63	11	149	0.18	0.30
Oct-22	4	23	4	58	0.06	0.50
Nov-22	3	17	3	47	0.05	0.58
Dec-22	1	6	1	17	0.02	1.00
Feb-23	3	17	3	34	0.05	0.58
Mar-23	3	17	3	40	0.05	0.58
Apr-23	35	196	35	566	0.55	0.17
Caledonia South (+4km)						
May-21	75	435	75	1,247	0.82	0.12
Jun-21	141	820	141	2,098	1.54	0.08
Jul-21	440	2,642	631	5,092	4.95	0.05
Aug-21	53	305	53	811	0.57	0.14
Sep-21	89	517	89	1,463	0.97	0.11
Oct-21	5	29	5	58	0.05	0.45
Nov-21	5	29	5	69	0.05	0.45

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-21	2	12	2	29	0.02	0.71
Feb-22	6	33	11	60	0.06	0.41
Mar-22	2	11	2	27	0.02	0.71
Apr-22	40	229	40	682	0.43	0.16
May-22	166	954	166	2,196	1.79	0.08
Jun-22	323	1,871	429	3,695	3.51	0.06
Jul-22	378	2,188	378	4,852	4.10	0.05
Sep-22	12	70	12	152	0.13	0.29
Oct-22	5	29	5	76	0.05	0.45
Nov-22	5	29	5	70	0.05	0.45
Dec-22	1	6	1	18	0.01	1.00
Feb-23	10	58	12	127	0.11	0.32
Mar-23	6	35	6	64	0.07	0.41
Apr-23	38	218	38	590	0.41	0.16

Table 2-5: Apportioned density and population estimate of kittiwake on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
May-21	402	69	1,193	1.91
Jun-21	576	99	1,675	2.74
Jul-21	979	167	2,346	4.65
Aug-21	12	2	29	0.06
Sep-21	6	1	17	0.03
Oct-21	18	3	41	0.09
Nov-21	12	2	35	0.06
Dec-21	6	1	17	0.03
Feb-22	16	5	32	0.08
May-22	635	110	1,617	3.02
Jun-22	1,031	237	2,039	4.90
Jul-22	356	61	1,067	1.69
Aug-22	5	1	15	0.03
Sep-22	29	5	76	0.14
Oct-22	12	2	35	0.06
Nov-22	12	2	35	0.06
Feb-23	11	2	23	0.05
Mar-23	12	2	29	0.06
Apr-23	193	34	557	0.92
Caledonia South (+2km)				
May-21	422	73	1,225	1.17
Jun-21	661	114	1,751	1.84
Jul-21	1,769	304	3,823	4.92

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Aug-21	40	11	69	0.11
Sep-21	445	77	1,312	1.24
Oct-21	17	3	46	0.05
Nov-21	17	3	52	0.05
Dec-21	6	1	17	0.02
Feb-22	16	3	32	0.04
Mar-22	5	1	16	0.01
Apr-22	229	40	681	0.64
May-22	849	148	1,968	2.36
Jun-22	1,743	352	3,259	4.85
Jul-22	555	96	1,400	1.54
Aug-22	5	5	15	0.02
Sep-22	63	11	149	0.18
Oct-22	23	4	58	0.06
Nov-22	17	3	47	0.05
Dec-22	6	1	17	0.02
Feb-23	17	3	34	0.05
Mar-23	17	3	40	0.05
Apr-23	196	35	566	0.54
Caledonia South (+4km)				
May-21	435	75	1,247	0.81
Jun-21	820	141	2,098	1.54
Jul-21	2,642	631	5,092	4.95
Aug-21	311	54	828	0.58
Sep-21	517	89	1,463	0.97

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-21	29	5	58	0.05
Nov-21	29	5	69	0.05
Dec-21	12	2	29	0.02
Feb-22	33	11	60	0.06
Mar-22	11	2	27	0.02
Apr-22	229	40	682	0.43
May-22	954	166	2,196	1.79
Jun-22	1,871	429	3,695	3.51
Jul-22	2,188	378	4,852	4.10
Aug-22	6	1	16	0.01
Sep-22	70	12	152	0.13
Oct-22	29	5	76	0.05
Nov-22	29	5	70	0.05
Dec-22	6	1	18	0.01
Feb-23	58	12	127	0.11
Mar-23	35	6	64	0.07
Apr-23	218	38	590	0.41

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 2-6 and Table 2-7.

2.2.3.2 Table 2-6 includes the unapportioned density and population estimates of great black-backed gull, and Table 2-7 includes the apportioned density and population estimates of great black-backed gull.

Table 2-6: Unapportioned density and population estimate of great black-backed gull on sea 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		
Caledonia South						
Nov-21	49	282	104	570	1.34	0.14
Dec-21	2	12	2	23	0.06	0.71
Jan-22	8	46	17	75	0.22	0.35
Feb-22	3	16	3	38	0.08	0.58
Sep-22	1	6	1	17	0.03	1.00
Oct-22	10	59	24	100	0.28	0.32
Jan-23	4	23	6	41	0.11	0.50
Feb-23	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Nov-21	63	361	160	653	1.00	0.13
Dec-21	2	12	2	29	0.03	0.71
Jan-22	11	63	23	103	0.18	0.30
Feb-22	11	59	21	101	0.16	0.30
Sep-22	2	11	2	29	0.03	0.71
Oct-22	13	75	35	127	0.21	0.28
Nov-22	2	12	2	35	0.03	0.71
Jan-23	5	29	11	46	0.08	0.45
Feb-23	3	17	3	34	0.05	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Mar-23	2	12	2	29	0.03	0.71
Caledonia South (+4km)						
Sep-21	13	75	13	226	0.14	0.28
Oct-21	1	6	1	17	0.01	1.00
Nov-21	80	460	213	822	0.86	0.11
Dec-21	3	17	3	35	0.03	0.58
Jan-22	17	98	52	144	0.18	0.24
Feb-22	17	92	33	157	0.17	0.24
Sep-22	3	18	3	35	0.03	0.58
Oct-22	21	123	70	188	0.23	0.22
Nov-22	4	23	4	47	0.04	0.50
Dec-22	5	29	5	71	0.05	0.45
Jan-23	10	58	12	123	0.11	0.32
Feb-23	4	23	6	40	0.04	0.50
Mar-23	3	17	3	35	0.03	0.58

Table 2-7: Apportioned density and population estimate of great black-backed gull on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Nov-21	314	110	655	1.49
Dec-21	12	2	23	0.06
Jan-22	46	17	75	0.22
Feb-22	16	3	38	0.08
Mar-22	5	1	16	0.02
Sep-22	6	1	17	0.03
Oct-22	59	24	100	0.28
Jan-23	23	6	41	0.11
Feb-23	6	1	17	0.03
Caledonia South (+2km)				
Oct-21	5	5	15	0.02
Nov-21	409	208	763	1.14
Dec-21	12	2	29	0.03
Jan-22	63	23	103	0.18
Feb-22	59	21	101	0.16
Mar-22	5	5	16	0.01
Sep-22	11	2	29	0.03
Oct-22	75	35	127	0.21
Nov-22	12	2	35	0.03
Jan-23	29	11	46	0.08
Feb-23	17	3	34	0.05
Mar-23	12	2	29	0.03
Apr-23	6	6	17	0.02

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
Sep-21	75	13	226	0.14
Oct-21	12	2	34	0.02
Nov-21	530	236	954	0.99
Dec-21	17	3	35	0.03
Jan-22	98	52	144	0.18
Feb-22	92	33	157	0.17
Mar-22	5	1	16	0.01
Sep-22	18	3	35	0.03
Oct-22	123	70	188	0.23
Nov-22	23	4	47	0.04
Dec-22	29	5	71	0.05
Jan-23	58	12	123	0.11
Feb-23	23	6	40	0.04
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 2-8 and Table 2-9.
- 2.2.4.2 Table 2-8 includes the unapportioned density and population estimates of herring gull, and Table 2-9 includes the apportioned density and population estimates of herring gull.

Table 2-8: Unapportioned density and population estimate of herring gull on sea 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		
Caledonia South						
Jun-21	1	6	1	17	0.03	1.00
Nov-21	5	29	6	63	0.14	0.45
Jul-22	4	23	4	70	0.11	0.50
Oct-22	1	6	1	18	0.03	1.00
Nov-22	1	6	1	18	0.03	1.00
Dec-22	2	12	2	35	0.06	0.71
Caledonia South (+2km)						
Jun-21	1	6	1	17	0.02	1.00
Nov-21	6	34	6	74	0.09	0.41
Jul-22	6	35	6	81	0.10	0.41
Oct-22	1	6	1	17	0.02	1.00
Nov-22	1	6	1	17	0.02	1.00
Dec-22	2	12	2	35	0.03	0.71
Caledonia South (+4km)						
Jun-21	1	6	1	17	0.01	1.00
Nov-21	6	34	6	75	0.06	0.41
Feb-22	6	33	6	87	0.06	0.41
Jul-22	8	46	8	93	0.09	0.35
Oct-22	1	6	1	18	0.01	1.00
Nov-22	1	6	1	18	0.01	1.00
Dec-22	2	12	2	35	0.02	0.71

Table 2-9: Apportioned density and population estimate of herring gull on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Jun-21	6	1	17	0.03
Nov-21	32	6	70	0.15
Jul-22	47	8	137	0.22
Aug-22	0	0	1	0
Oct-22	6	1	18	0.03
Nov-22	6	1	18	0.03
Dec-22	12	2	35	0.06
Caledonia South (+2km)				
Jun-21	6	1	17	0.02
Oct-21	1	1	2	-
Nov-21	38	10	84	0.11
Jul-22	70	41	168	0.19
Oct-22	6	1	17	0.02
Nov-22	6	1	17	0.02
Dec-22	12	2	35	0.03
Caledonia South (+4km)				
Jun-21	6	1	17	0.01
Jul-21	4	1	10	0.01
Nov-21	39	7	86	0.07
Feb-22	33	6	87	0.06
Jul-22	92	16	210	0.17
Oct-22	6	1	18	0.01
Nov-22	6	1	18	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Dec-22	12	2	35	0.02

2.2.5 Common gull

2.2.5.1 No common gull were recorded in Caledonia South.

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 2-10 and Table 2-11.

2.2.6.2 Table 2-10 includes the unapportioned density and population estimates of lesser black-backed gull, and Table 2-11 includes the apportioned density and population estimates of lesser black-backed gull.

Table 2-10: Unapportioned density and population estimate of lesser black-backed gull on sea 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		
Caledonia South						
Jul-22	4	23	4	70	0.11	0.50
Caledonia South (+2km)						
Jul-22	4	23	4	69	0.06	0.50
Caledonia South (+4km)						
Jul-22	4	23	4	69	0.04	0.50

Table 2-11: Apportioned density and population estimate of lesser black-backed gull on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Jul-22	47	8	137	0.22
Aug-22	0	0	1	0
Caledonia South (+2km)				
Jul-22	46	27	144	0.13
Aug-22	0	0	1	0
Caledonia South (+4km)				
Jul-21	2	0	8	0
Jul-22	46	8	155	0.09

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 2-12.

Table 2-12: Density and population estimate of unidentified commic tern species on sea 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		
Caledonia South						
<i>None recorded</i>						
Caledonia South (+2km)						
<i>None recorded</i>						
Caledonia South (+4km)						
May-22	2	11	2	34	0.02	0.71

Unidentified tern species

2.3.1.2 No unidentified tern species on sea were recorded in Caledonia South.

2.3.2 Common tern

2.3.2.1 No common tern on sea were recorded in Caledonia South.

2.3.3 Arctic tern

2.3.3.1 No Arctic tern on sea were recorded in Caledonia South.

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 2-13 and Table 2-14.

2.4.1.2 Table 2-13 includes the unapportioned density and population estimates of great skua, and Table 2-14 includes the apportioned density and population estimates of great skua.

Table 2-13: Unapportioned density and population estimate of great skua on sea 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		
Caledonia South						
Jul-21	3	18	3	53	0.09	0.58
Caledonia South (+2km)						
Jul-21	4	23	4	70	0.06	0.50
Caledonia South (+4km)						
Jun-21	1	6	1	17	0.01	1.00
Jul-21	4	24	4	72	0.04	0.50

Table 2-14: Apportioned density and population estimate of great skua on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Jul-21	18	3	53	0.09
Caledonia South (+2km)				
Jul-21	23	4	70	0.06
Caledonia South (+4km)				
Jun-21	6	1	17	0.01
Jul-21	24	4	72	0.04

2.4.2 Arctic skua

2.4.2.1 No Arctic skua on sea were recorded in Caledonia South.

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 2-15.

Table 2-15: Density and population estimate of unidentified guillemot and/or razorbill on sea 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		
Caledonia South						
May-21	40	233	52	454	1.11	0.16
Jun-21	72	419	157	803	1.99	0.12
Jul-21	22	129	22	246	0.61	0.21
Aug-21	57	329	75	745	1.56	0.13
Sep-21	46	267	180	354	1.27	0.15
Oct-21	12	70	29	117	0.33	0.29
Nov-21	10	58	23	104	0.28	0.32
Dec-21	47	273	151	429	1.30	0.15
Jan-22	13	75	40	116	0.36	0.28
Feb-22	51	276	189	395	1.31	0.14
Mar-22	14	75	32	118	0.36	0.27
Apr-22	17	98	63	132	0.47	0.24
May-22	72	416	248	618	1.98	0.12
Jun-22	17	98	41	162	0.47	0.24
Jul-22	52	303	58	677	1.44	0.14
Aug-22	6	35	6	75	0.17	0.41
Sep-22	53	309	175	449	1.47	0.14

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	2	12	2	35	0.06	0.71
Nov-22	7	41	7	88	0.19	0.38
Dec-22	6	35	18	59	0.17	0.41
Jan-23	1	6	1	18	0.03	1.00
Feb-23	6	34	6	80	0.16	0.41
Mar-23	9	52	12	99	0.25	0.33
Apr-23	15	85	15	233	0.40	0.26
Caledonia South (+2km)						
May-21	92	532	202	1,029	1.48	0.10
Jun-21	189	1,096	435	1,995	3.05	0.07
Jul-21	45	262	81	483	0.73	0.15
Aug-21	128	734	298	1,468	2.04	0.09
Sep-21	80	462	324	636	1.29	0.11
Oct-21	32	186	99	284	0.52	0.18
Nov-21	13	74	29	137	0.21	0.28
Dec-21	90	519	357	686	1.44	0.11
Jan-22	19	109	46	178	0.30	0.23
Feb-22	89	475	347	620	1.32	0.11
Mar-22	24	127	74	175	0.35	0.20
Apr-22	29	166	74	263	0.46	0.19
May-22	94	539	321	803	1.50	0.10
Jun-22	23	131	62	216	0.36	0.21
Jul-22	118	683	243	1,203	1.90	0.09
Aug-22	10	57	23	103	0.16	0.32
Sep-22	118	674	468	880	1.88	0.09

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	2	12	2	35	0.03	0.71
Nov-22	10	58	17	117	0.16	0.32
Dec-22	9	52	35	69	0.14	0.33
Jan-23	2	11	2	29	0.03	0.71
Feb-23	10	57	17	103	0.16	0.32
Mar-23	20	115	58	173	0.32	0.22
Apr-23	18	101	18	258	0.28	0.24
Caledonia South (+4km)						
May-21	125	725	313	1,363	1.36	0.09
Jun-21	313	1,819	727	3,174	3.41	0.06
Jul-21	59	354	162	607	0.66	0.13
Aug-21	376	2,163	730	3,733	4.06	0.05
Sep-21	135	784	453	1,272	1.47	0.09
Oct-21	50	290	145	441	0.54	0.14
Nov-21	25	144	69	236	0.27	0.20
Dec-21	150	868	642	1,087	1.63	0.08
Jan-22	23	133	69	207	0.25	0.21
Feb-22	121	657	461	863	1.23	0.09
Mar-22	33	177	113	247	0.33	0.17
Apr-22	44	252	103	401	0.47	0.15
May-22	151	868	471	1,316	1.63	0.08
Jun-22	33	191	81	324	0.36	0.17
Jul-22	181	1,048	399	1,766	1.96	0.07
Aug-22	20	115	40	195	0.22	0.22
Sep-22	168	980	671	1,272	1.84	0.08

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	3	18	3	41	0.03	0.58
Nov-22	24	140	70	228	0.26	0.20
Dec-22	11	65	41	88	0.12	0.30
Jan-23	3	18	3	35	0.03	0.58
Feb-23	16	92	52	138	0.17	0.25
Mar-23	27	157	87	227	0.29	0.19
Apr-23	20	114	23	263	0.21	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 2-16.

Table 2-16: Density and population estimate of unidentified auk species on sea 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		
Caledonia South						
Jun-21	2	12	2	23	0.06	0.71
Jul-21	10	59	12	106	0.28	0.32
Aug-21	46	266	64	572	1.26	0.15
Sep-21	2	12	2	29	0.06	0.71
Oct-21	8	47	12	94	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	6	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

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Aug-22	3	17	3	40	0.08	0.58
Sep-22	9	52	9	117	0.25	0.33
Dec-22	1	6	1	18	0.03	1.00
Jan-23	1	6	1	18	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
May-21	2	12	2	35	0.03	0.71
Jun-21	5	29	5	64	0.08	0.45
Jul-21	28	163	70	285	0.45	0.19
Aug-21	84	482	161	929	1.34	0.11
Sep-21	4	23	6	40	0.06	0.50
Oct-21	10	58	17	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	17	80	0.13	0.35
Jun-22	5	28	5	68	0.08	0.45
Jul-22	11	64	23	110	0.18	0.30
Aug-22	6	34	6	63	0.09	0.41
Sep-22	22	126	46	200	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	39	0.05	0.58
Caledonia South (+4km)						
May-21	3	17	3	46	0.03	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-21	8	46	8	93	0.09	0.35
Jul-21	36	216	126	342	0.40	0.17
Aug-21	183	1,053	328	1,812	1.97	0.07
Sep-21	7	41	7	93	0.08	0.38
Oct-21	12	70	29	128	0.13	0.29
Mar-22	2	11	2	32	0.02	0.71
Apr-22	13	75	17	138	0.14	0.28
May-22	10	57	23	98	0.11	0.32
Jun-22	7	41	7	93	0.08	0.38
Jul-22	13	75	35	122	0.14	0.28
Aug-22	6	34	11	63	0.06	0.41
Sep-22	29	169	93	245	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

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 2-17.

Table 2-17: Density and population estimate of unidentified auk and/or shearwater species on sea 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		
Caledonia South						
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	59	0.11	0.50
May-22	2	12	2	29	0.06	0.71
Jun-22	1	6	1	17	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
May-21	4	23	4	64	0.06	0.50
Jun-21	13	75	13	162	0.21	0.28
Jul-21	9	52	9	122	0.14	0.33
May-22	3	17	3	34	0.05	0.58
Jun-22	1	6	1	17	0.02	1.00
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
Caledonia South (+4km)						
May-21	5	29	5	75	0.05	0.45
Jun-21	13	76	13	174	0.14	0.28
Jul-21	10	60	10	132	0.11	0.32
May-22	3	17	3	34	0.03	0.58
Jun-22	2	12	2	29	0.02	0.71
Sep-22	73	426	73	1,278	0.80	0.12
Mar-23	2	12	2	23	0.02	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
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 design-based analysis) have been presented in Table 2-18 and Table 2-19.

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

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 2-20.

Table 2-18: Unapportioned density and population estimate of common guillemot on sea 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		
Caledonia South						
May-21	558	3,248	2,183	4,383	15.45	0.04
Jun-21	262	1,524	931	2,379	7.25	0.06
Jul-21	905	5,308	1,548	11,682	25.24	0.03
Aug-21	31	179	110	254	0.85	0.18
Sep-21	130	754	418	1,108	3.59	0.09
Oct-21	76	445	316	597	2.12	0.11
Nov-21	90	518	403	628	2.46	0.11
Dec-21	4	23	6	41	0.11	0.50
Jan-22	36	208	64	358	0.99	0.17
Feb-22	38	206	92	336	0.98	0.16
Mar-22	11	59	21	91	0.28	0.30
Apr-22	55	317	161	490	1.51	0.13

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
May-22	659	3,806	2,408	5,324	18.10	0.04
Jun-22	705	4,083	2,137	6,058	19.42	0.04
Jul-22	539	3,144	1,552	4,882	14.95	0.04
Aug-22	44	253	86	449	1.20	0.15
Sep-22	336	1,959	1,038	2,996	9.32	0.05
Oct-22	20	118	47	217	0.56	0.22
Nov-22	1	6	1	18	0.03	1.00
Dec-22	21	124	59	200	0.59	0.22
Jan-23	36	211	117	304	1.00	0.17
Feb-23	64	365	148	685	1.74	0.13
Mar-23	146	846	510	1,339	4.02	0.08
Apr-23	230	1,308	375	2,816	6.22	0.07
Caledonia South (+2km)						
May-21	1,165	6,732	4,646	8,800	18.73	0.03
Jun-21	454	2,633	1,560	4,071	7.33	0.05
Jul-21	1,489	8,663	2,455	18,682	24.10	0.03
Aug-21	42	241	149	344	0.67	0.15
Sep-21	453	2,618	1,208	4,641	7.28	0.05
Oct-21	134	777	580	986	2.16	0.09
Nov-21	190	1,088	859	1,300	3.03	0.07
Dec-21	11	63	29	109	0.18	0.30
Jan-22	51	293	126	460	0.82	0.14
Feb-22	73	390	192	652	1.09	0.12
Mar-22	22	116	48	185	0.32	0.21
Apr-22	91	520	286	783	1.45	0.10

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
May-22	958	5,496	3,614	7,704	15.29	0.03
Jun-22	1,175	6,671	4,190	9,276	18.56	0.03
Jul-22	1,027	5,942	3,014	9,315	16.53	0.03
Aug-22	97	554	377	806	1.54	0.10
Sep-22	1,242	7,094	1,799	15,131	19.74	0.03
Oct-22	58	334	81	743	0.93	0.13
Nov-22	3	17	3	35	0.05	0.58
Dec-22	39	225	144	312	0.63	0.16
Jan-23	62	356	241	488	0.99	0.13
Feb-23	120	685	331	1,096	1.91	0.09
Mar-23	224	1,290	869	1,866	3.59	0.07
Apr-23	306	1,714	689	3,254	4.77	0.06
Caledonia South (+4km)						
May-21	1,536	8,912	6,063	11,749	16.71	0.03
Jun-21	626	3,638	2,098	5,493	6.82	0.04
Jul-21	2,078	12,479	4,005	23,727	23.40	0.02
Aug-21	81	466	305	633	0.87	0.11
Sep-21	755	4,384	2,131	7,369	8.22	0.04
Oct-21	231	1,341	946	1,747	2.51	0.07
Nov-21	315	1,811	1,299	2,346	3.40	0.06
Dec-21	14	81	35	139	0.15	0.27
Jan-22	67	386	202	594	0.72	0.12
Feb-22	110	597	331	923	1.12	0.10
Mar-22	46	247	113	387	0.46	0.15
Apr-22	130	745	413	1,118	1.40	0.09

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
May-22	1,478	8,495	5,805	10,737	15.93	0.03
Jun-22	1,486	8,606	5,003	11,785	16.14	0.03
Jul-22	2,122	12,286	5,749	20,692	23.03	0.02
Aug-22	139	797	476	1,135	1.49	0.08
Sep-22	1,977	11,536	3,863	21,999	21.63	0.02
Oct-22	90	529	129	1,116	0.99	0.11
Nov-22	11	64	18	129	0.12	0.30
Dec-22	53	312	206	418	0.58	0.14
Jan-23	94	550	369	760	1.03	0.10
Feb-23	158	912	439	1,443	1.71	0.08
Mar-23	330	1,923	1,352	2,622	3.61	0.06
Apr-23	348	1,992	927	3,709	3.73	0.05

Table 2-19: Apportioned density and population estimate of common guillemot on sea 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	
Caledonia South				
May-21	3,479	2,235	4,841	16.53
Jun-21	1,908	1,075	3,120	9.06
Jul-21	5,496	1,580	12,057	26.11
Aug-21	449	184	813	2.13
Sep-21	1,009	588	1,455	4.79
Oct-21	546	354	775	2.60
Nov-21	576	426	732	2.74
Dec-21	202	119	292	0.96
Jan-22	277	102	462	1.32
Feb-22	439	261	663	2.09
Mar-22	138	53	219	0.66
Apr-22	399	214	604	1.90
May-22	4,219	2,646	5,949	20.05
Jun-22	4,202	2,181	6,274	19.97
Jul-22	3,466	1,617	5,586	16.47
Aug-22	288	91	528	1.37
Sep-22	2,243	1,185	3,441	10.66
Oct-22	130	49	252	0.62
Nov-22	22	4	54	0.10
Dec-22	160	77	264	0.76
Jan-23	216	118	318	1.03
Feb-23	390	152	745	1.85
Mar-23	890	520	1,423	4.23

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	1,387	390	3,029	6.59
Caledonia South (+2km)				
May-21	7,264	5,178	9,854	20.19
Jun-21	3,667	2,594	5,968	10.19
Jul-21	9,088	2,880	19,492	25.26
Aug-21	812	720	1,441	2.26
Sep-21	3,065	1,655	5,273	8.52
Oct-21	999	802	1,335	2.78
Nov-21	1,162	933	1,437	3.23
Dec-21	418	384	591	1.16
Jan-22	391	224	617	1.09
Feb-22	767	569	1,156	2.13
Mar-22	237	169	358	0.66
Apr-22	648	414	987	1.80
May-22	6,032	4,150	8,512	16.77
Jun-22	6,834	4,353	9,573	19.00
Jul-22	6,623	3,695	10,509	18.41
Aug-22	610	433	902	1.69
Sep-22	8,115	2,820	17,187	22.56
Oct-22	346	93	777	0.96
Nov-22	38	24	77	0.11
Dec-22	273	192	380	0.76
Jan-23	365	250	511	1.02
Feb-23	730	376	1,176	2.03
Mar-23	1,401	980	2,044	3.89
Apr-23	1,814	789	3,501	5.04

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
May-21	9,635	6,367	13,131	18.05
Jun-21	5,246	2,741	8,271	9.83
Jul-21	13,034	4,241	24,703	24.42
Aug-21	2,307	964	3,702	4.32
Sep-21	5,142	2,546	8,634	9.63
Oct-21	1,678	1,112	2,274	3.14
Nov-21	1,955	1,368	2,582	3.66
Dec-21	720	513	956	1.35
Jan-22	507	267	778	0.95
Feb-22	1,124	696	1,625	2.11
Mar-22	416	223	625	0.78
Apr-22	921	479	1,403	1.72
May-22	9,328	6,253	11,997	17.48
Jun-22	8,846	5,092	12,223	16.57
Jul-22	13,331	6,146	22,459	24.98
Aug-22	898	514	1,301	1.68
Sep-22	12,882	4,493	24,477	24.13
Oct-22	559	134	1,190	1.05
Nov-22	133	54	252	0.25
Dec-22	372	244	504	0.70
Jan-23	566	372	789	1.06
Feb-23	986	477	1,561	1.85
Mar-23	2,084	1,434	2,868	3.90
Apr-23	2,107	951	3,974	3.95

Table 2-20: Availability bias corrected density and population estimate of common guillemot on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
May-21	4,561	2,930	6,346	21.67
Jun-21	2,501	1,409	4,090	11.88
Jul-21	7,205	2,071	15,806	34.23
Aug-21	588	241	1,066	2.79
Sep-21	1,322	771	1,907	6.28
Oct-21	716	464	1,016	3.40
Nov-21	755	558	960	3.59
Dec-21	265	156	383	1.26
Jan-22	364	134	606	1.73
Feb-22	576	342	869	2.73
Mar-22	181	70	287	0.86
Apr-22	523	280	792	2.49
May-22	5,532	3,469	7,799	26.28
Jun-22	5,509	2,860	8,226	26.18
Jul-22	4,544	2,120	7,323	21.59
Aug-22	377	120	693	1.79
Sep-22	2,941	1,553	4,511	13.98
Oct-22	170	64	330	0.81
Nov-22	28	5	71	0.13
Dec-22	210	101	346	1.00
Jan-23	283	155	417	1.35
Feb-23	511	199	977	2.43
Mar-23	1,167	682	1,866	5.54

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	1,818	511	3,971	8.64
Caledonia South (+2km)				
May-21	9,524	6,789	12,919	26.48
Jun-21	4,807	3,400	7,824	13.36
Jul-21	11,914	3,775	25,554	33.12
Aug-21	1,065	944	1,889	2.96
Sep-21	4,018	2,170	6,913	11.17
Oct-21	1,310	1,052	1,751	3.64
Nov-21	1,523	1,223	1,884	4.23
Dec-21	549	504	775	1.52
Jan-22	512	293	808	1.42
Feb-22	1,006	746	1,516	2.80
Mar-22	310	221	469	0.86
Apr-22	850	543	1,294	2.36
May-22	7,908	5,441	11,159	21.98
Jun-22	8,959	5,707	12,550	24.91
Jul-22	8,683	4,844	13,777	24.14
Aug-22	799	567	1,183	2.22
Sep-22	10,639	3,697	22,533	29.58
Oct-22	453	122	1,019	1.26
Nov-22	50	31	101	0.14
Dec-22	358	252	499	1.00
Jan-23	479	328	670	1.33
Feb-23	957	493	1,542	2.66
Mar-23	1,837	1,285	2,680	5.11
Apr-23	2,378	1,035	4,589	6.61

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
May-21	12,631	8,347	17,215	23.66
Jun-21	6,878	3,593	10,844	12.88
Jul-21	17,087	5,559	32,386	32.01
Aug-21	3,025	1,264	4,854	5.67
Sep-21	6,741	3,337	11,319	12.63
Oct-21	2,200	1,457	2,981	4.12
Nov-21	2,563	1,793	3,385	4.80
Dec-21	944	673	1,253	1.77
Jan-22	664	350	1,020	1.24
Feb-22	1,474	913	2,130	2.76
Mar-22	545	292	819	1.02
Apr-22	1,207	628	1,839	2.26
May-22	12,229	8,198	15,728	22.91
Jun-22	11,597	6,675	16,024	21.73
Jul-22	17,477	8,058	29,444	32.74
Aug-22	1,177	674	1,706	2.21
Sep-22	16,888	5,890	32,090	31.64
Oct-22	732	176	1,560	1.37
Nov-22	175	71	331	0.33
Dec-22	487	319	660	0.91
Jan-23	742	487	1,035	1.39
Feb-23	1,292	625	2,047	2.42
Mar-23	2,733	1,880	3,760	5.12
Apr-23	2,762	1,247	5,210	5.18

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 design-based analysis) have been presented in Table 2-21 and Table 2-22.
- 2.5.3.2 Table 2-21 includes the unapportioned density and population estimates of razorbill, and Table 2-22 includes the apportioned density and population estimates of razorbill.
- 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 2-23.

Table 2-21: Unapportioned density and population estimate of razorbill on sea 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		
Caledonia South						
May-21	33	192	87	291	0.91	0.17
Jun-21	39	227	111	366	1.08	0.16
Jul-21	100	586	282	991	2.79	0.10
Aug-21	13	75	23	133	0.36	0.28
Sep-21	12	70	29	110	0.33	0.29
Oct-21	5	29	12	41	0.14	0.45
Dec-21	2	12	2	29	0.06	0.71
Jan-22	3	17	3	40	0.08	0.58
Feb-22	7	38	11	70	0.18	0.38
Mar-22	1	5	1	16	0.02	1.00
Apr-22	21	121	40	207	0.58	0.22
May-22	73	422	173	710	2.01	0.12
Jun-22	9	52	29	75	0.25	0.33
Jul-22	35	204	105	327	0.97	0.17
Aug-22	12	69	35	104	0.33	0.29

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-22	78	455	251	653	2.16	0.11
Nov-22	2	12	2	35	0.06	0.71
Dec-22	3	18	3	41	0.09	0.58
Jan-23	7	41	7	76	0.19	0.38
Feb-23	24	137	68	223	0.65	0.20
Mar-23	27	157	87	232	0.75	0.19
Apr-23	53	301	53	711	1.43	0.14
Caledonia South (+2km)						
May-21	73	422	254	584	1.17	0.12
Jun-21	69	400	209	644	1.11	0.12
Jul-21	157	913	436	1,577	2.54	0.08
Aug-21	19	109	46	172	0.30	0.23
Sep-21	38	220	133	318	0.61	0.16
Oct-21	8	46	23	70	0.13	0.35
Dec-21	5	29	12	46	0.08	0.45
Jan-22	6	34	11	63	0.09	0.41
Feb-22	19	101	59	150	0.28	0.23
Mar-22	3	16	3	32	0.04	0.58
Apr-22	45	257	109	440	0.71	0.15
May-22	108	620	327	947	1.72	0.10
Jun-22	12	68	40	91	0.19	0.29
Jul-22	98	567	289	914	1.58	0.10
Aug-22	39	223	103	383	0.62	0.16
Sep-22	159	908	663	1,154	2.53	0.08
Oct-22	1	6	1	17	0.02	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Nov-22	6	35	6	76	0.10	0.41
Dec-22	8	46	12	81	0.13	0.35
Jan-23	11	63	11	126	0.18	0.30
Feb-23	33	188	91	308	0.52	0.17
Mar-23	32	184	81	294	0.51	0.18
Apr-23	72	403	78	879	1.12	0.12
Caledonia South (+4km)						
May-21	99	574	331	824	1.08	0.10
Jun-21	125	727	337	1,255	1.36	0.09
Jul-21	244	1,465	907	2,228	2.75	0.06
Aug-21	26	150	69	230	0.28	0.20
Sep-21	66	383	232	569	0.72	0.12
Oct-21	10	58	35	81	0.11	0.32
Dec-21	5	29	12	46	0.05	0.45
Jan-22	7	40	12	75	0.07	0.38
Feb-22	27	147	87	212	0.28	0.19
Mar-22	5	27	5	64	0.05	0.45
Apr-22	93	533	304	803	1.00	0.10
May-22	182	1,046	603	1,500	1.96	0.07
Jun-22	21	122	75	174	0.23	0.22
Jul-22	156	903	521	1,401	1.69	0.08
Aug-22	47	269	103	453	0.50	0.15
Sep-22	239	1,395	1,074	1,710	2.62	0.06
Oct-22	1	6	1	18	0.01	1.00
Nov-22	13	76	18	140	0.14	0.28

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	10	59	24	100	0.11	0.32
Jan-23	14	82	29	146	0.15	0.27
Feb-23	52	300	173	444	0.56	0.14
Mar-23	49	286	163	402	0.54	0.14
Apr-23	83	475	137	916	0.89	0.11

Table 2-22: Apportioned density and population estimate of razorbill on sea 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	
Caledonia South				
May-21	206	89	321	0.98
Jun-21	284	128	480	1.35
Jul-21	607	288	1,023	2.88
Aug-21	188	39	426	0.89
Sep-21	94	41	144	0.44
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	12	3	38	0.06
Apr-22	152	53	255	0.72
May-22	468	190	793	2.22
Jun-22	54	30	78	0.25
Jul-22	225	109	374	1.07
Aug-22	78	37	122	0.37
Sep-22	521	286	750	2.48
Nov-22	43	7	105	0.21
Dec-22	23	4	54	0.11
Jan-23	42	7	80	0.20
Feb-23	146	70	243	0.70
Mar-23	165	89	247	0.78
Apr-23	319	55	765	1.52

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+2km)				
May-21	455	287	654	1.27
Jun-21	557	366	944	1.55
Jul-21	958	481	1,645	2.66
Aug-21	367	304	721	1.02
Sep-21	258	171	361	0.72
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	33	20	62	0.09
Apr-22	320	172	554	0.89
May-22	681	388	1,046	1.89
Jun-22	70	42	94	0.19
Jul-22	632	354	1,031	1.76
Aug-22	245	125	429	0.68
Sep-22	1,039	794	1,311	2.89
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	200	103	331	0.56
Mar-23	200	97	322	0.56
Apr-23	427	102	946	1.19

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
May-21	621	348	921	1.16
Jun-21	1,048	440	1,890	1.96
Jul-21	1,530	960	2,320	2.87
Aug-21	743	218	1,345	1.39
Sep-21	449	277	667	0.84
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	45	10	103	0.09
Apr-22	659	353	1,008	1.23
May-22	1,149	650	1,676	2.15
Jun-22	125	76	180	0.23
Jul-22	980	557	1,521	1.84
Aug-22	303	111	519	0.57
Sep-22	1,558	1,249	1,903	2.92
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	324	188	480	0.61
Mar-23	310	173	440	0.58
Apr-23	502	141	982	0.94

Table 2-23: Availability bias corrected density and population estimate of razorbill on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
May-21	249	108	389	1.18
Jun-21	344	155	581	1.63
Jul-21	735	348	1,239	3.49
Aug-21	228	47	516	1.08
Sep-21	113	49	175	0.54
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	14	3	47	0.07
Apr-22	184	64	309	0.88
May-22	567	230	961	2.69
Jun-22	65	36	94	0.31
Jul-22	272	133	453	1.29
Aug-22	95	45	148	0.45
Sep-22	631	347	908	3.00
Nov-22	52	9	127	0.25
Dec-22	28	5	66	0.13
Jan-23	51	9	96	0.24
Feb-23	177	85	294	0.84
Mar-23	200	107	299	0.95
Apr-23	386	67	926	1.84

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+2km)				
May-21	551	348	792	1.53
Jun-21	675	443	1,143	1.88
Jul-21	1,160	582	1,993	3.22
Aug-21	445	369	873	1.24
Sep-21	312	207	438	0.87
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	40	24	75	0.11
Apr-22	388	209	671	1.08
May-22	824	469	1,267	2.29
Jun-22	84	50	114	0.23
Jul-22	765	429	1,249	2.13
Aug-22	297	152	519	0.83
Sep-22	1,258	961	1,587	3.50
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	243	125	400	0.67
Mar-23	242	117	390	0.67
Apr-23	517	123	1,145	1.44

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
May-21	751	421	1,115	1.41
Jun-21	1,270	533	2,289	2.38
Jul-21	1,853	1,163	2,809	3.47
Aug-21	899	264	1,629	1.69
Sep-21	544	336	807	1.02
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	55	12	125	0.10
Apr-22	798	427	1,220	1.49
May-22	1,391	787	2,030	2.61
Jun-22	152	92	219	0.28
Jul-22	1,187	675	1,842	2.22
Aug-22	367	135	629	0.69
Sep-22	1,886	1,513	2,304	3.53
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	393	228	582	0.74
Mar-23	375	209	532	0.70
Apr-23	608	170	1,189	1.14

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 design-based analysis) have been presented in Table 2-24 and Table 2-25.

2.5.4.2 Table 2-24 includes the unapportioned density and population estimates of puffin, and Table 2-25 includes the apportioned density and population estimates of puffin.

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 2-26.

Table 2-24: Unapportioned density and population estimate of puffin on sea 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		
Caledonia South						
May-21	19	111	64	151	0.53	0.23
Jun-21	31	180	70	314	0.86	0.18
Jul-21	34	199	59	352	0.95	0.17
Aug-21	175	1,010	445	1,674	4.80	0.08
Sep-21	8	46	23	75	0.22	0.35
Oct-21	19	111	41	182	0.53	0.23
Apr-22	39	225	86	374	1.07	0.16
May-22	63	364	214	502	1.73	0.13
Jun-22	6	35	6	93	0.17	0.41
Jul-22	16	93	47	140	0.44	0.25
Aug-22	49	282	150	420	1.34	0.14
Sep-22	104	606	332	956	2.88	0.10
Feb-23	2	11	2	23	0.05	0.71
Mar-23	3	17	3	35	0.08	0.58
Apr-23	4	23	6	46	0.11	0.50

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia South (+2km)						
May-21	45	260	168	370	0.72	0.15
Jun-21	45	261	104	452	0.73	0.15
Jul-21	60	349	169	570	0.97	0.13
Aug-21	246	1,410	831	2,184	3.92	0.06
Sep-21	13	75	35	121	0.21	0.28
Oct-21	25	145	70	232	0.40	0.20
Mar-22	2	11	2	32	0.03	0.71
Apr-22	73	417	177	669	1.16	0.12
May-22	94	539	298	763	1.50	0.10
Jun-22	12	68	17	131	0.19	0.29
Jul-22	18	104	52	162	0.29	0.24
Aug-22	85	486	274	720	1.35	0.11
Sep-22	191	1,091	771	1,439	3.04	0.07
Feb-23	4	23	4	51	0.06	0.50
Mar-23	5	29	5	63	0.08	0.45
Apr-23	6	34	6	62	0.09	0.41
Caledonia South (+4km)						
May-21	61	354	209	534	0.66	0.13
Jun-21	72	418	209	674	0.78	0.12
Jul-21	87	522	348	739	0.98	0.11
Aug-21	309	1,777	1,191	2,600	3.33	0.06
Sep-21	21	122	70	186	0.23	0.22
Oct-21	31	180	81	296	0.34	0.18
Mar-22	2	11	2	32	0.02	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Apr-22	116	665	338	1,055	1.25	0.09
May-22	149	856	512	1,213	1.60	0.08
Jun-22	18	104	41	185	0.19	0.24
Jul-22	28	162	104	220	0.30	0.19
Aug-22	126	722	384	1,106	1.35	0.09
Sep-22	278	1,622	1,179	2,101	3.04	0.06
Oct-22	1	6	1	18	0.01	1.00
Feb-23	4	23	4	52	0.04	0.50
Mar-23	9	52	23	87	0.10	0.33
Apr-23	6	34	6	69	0.06	0.41

Table 2-25: Apportioned density and population estimate of puffin on sea 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	
Caledonia South				
May-21	111	64	152	0.53
Jun-21	182	70	320	0.87
Jul-21	202	59	356	0.96
Aug-21	1,223	494	2,139	5.81
Sep-21	47	23	77	0.22
Oct-21	120	42	203	0.57
Apr-22	233	87	390	1.11
May-22	368	215	509	1.75
Jun-22	35	6	94	0.17
Jul-22	94	47	142	0.45
Aug-22	290	152	437	1.38
Sep-22	616	334	980	2.93
Feb-23	11	2	23	0.05
Mar-23	17	3	35	0.08
Apr-23	23	6	46	0.11
Caledonia South (+2km)				
May-21	261	169	374	0.73
Jun-21	269	112	471	0.75
Jul-21	357	177	581	0.99
Aug-21	1,796	1,217	2,935	4.99
Sep-21	76	36	122	0.21
Oct-21	154	79	252	0.43
Mar-22	12	3	36	0.03
Apr-22	431	191	699	1.20

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
May-22	544	303	772	1.51
Jun-22	68	17	132	0.19
Jul-22	105	53	164	0.29
Aug-22	499	287	744	1.39
Sep-22	1,156	836	1,557	3.21
Feb-23	23	4	51	0.06
Mar-23	29	5	64	0.08
Apr-23	34	6	63	0.10
Caledonia South (+4km)				
May-21	356	209	539	0.67
Jun-21	429	211	698	0.80
Jul-21	532	357	752	1.00
Aug-21	2,559	1,441	3,960	4.79
Sep-21	123	70	188	0.23
Oct-21	188	83	314	0.35
Mar-22	11	2	34	0.02
Apr-22	691	343	1,104	1.29
May-22	862	514	1,225	1.62
Jun-22	105	41	187	0.20
Jul-22	163	105	221	0.31
Aug-22	736	388	1,132	1.38
Sep-22	1,688	1,211	2,225	3.16
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 2-26: Availability bias corrected density and population estimate of puffin on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
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	110	55	165	0.52
Aug-22	338	177	509	1.61
Sep-22	718	389	1,142	3.41
Feb-23	13	2	27	0.06
Mar-23	20	3	41	0.09
Apr-23	27	7	54	0.13
Caledonia South (+2km)				
May-21	304	197	435	0.85
Jun-21	314	131	549	0.87
Jul-21	415	206	677	1.15
Aug-21	2,093	1,418	3,420	5.82
Sep-21	88	41	142	0.24
Oct-21	179	92	293	0.50
Mar-22	14	3	42	0.04
Apr-22	502	222	814	1.40

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
May-22	634	353	900	1.76
Jun-22	80	20	154	0.22
Jul-22	122	62	191	0.34
Aug-22	581	334	866	1.62
Sep-22	1,347	974	1,814	3.74
Feb-23	27	5	59	0.07
Mar-23	34	6	75	0.09
Apr-23	40	7	73	0.11
Caledonia South (+4km)				
May-21	414	244	628	0.78
Jun-21	499	245	813	0.94
Jul-21	620	416	876	1.16
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	190	122	258	0.36
Aug-22	857	452	1,319	1.61
Sep-22	1,967	1,411	2,592	3.68
Oct-22	7	1	22	0.01
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 2-27 and Table 2-28.

2.5.5.2 Table 2-27 includes the unapportioned density and population estimates of black guillemot, and Table 2-28 includes the apportioned density and population estimates of black guillemot.

Table 2-27: Unapportioned density and population estimate of black guillemot on sea 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		
Caledonia South						
Jun-21	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Jun-21	1	6	1	17	0.02	1.00
Apr-22	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
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 2-28: Apportioned density and population estimate of black guillemot on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Jun-21	6	1	17	0.03
Caledonia South (+2km)				
Jun-21	6	1	18	0.02
Apr-22	6	1	18	0.02
Caledonia South (+4km)				
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 No red-throated diver on sea were recorded in Caledonia South.

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 2-29 and Table 2-30.

2.6.2.2 Table 2-29 includes the unapportioned density and population estimates of great northern diver, and Table 2-30 includes the apportioned density and population estimates of great northern diver.

Table 2-29: Unapportioned density and population estimate of great northern diver on sea 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		
Caledonia South						
Jun-21	1	6	1	17	0.03	1.00
Nov-21	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
Jun-21	1	6	1	17	0.02	1.00
Nov-21	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
Jun-21	1	6	1	17	0.01	1.00
Nov-21	1	6	1	17	0.01	1.00

Table 2-30: Apportioned density and population estimate of great northern diver on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

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

2.7 Procelleriidae

2.7.1 Unidentified species

Unidentified fulmar and/or gull species

2.7.1.1 No unidentified fulmar and/or gull species on sea were recorded in Caledonia South.

Unidentified small shearwater species

2.7.1.2 No unidentified small shearwater species on sea were recorded in Caledonia South.

Unidentified shearwater species

2.7.1.3 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 2-31.

Table 2-31: Density and population estimate of unidentified shearwater species on sea 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		
Caledonia South						
<i>None recorded</i>						
Caledonia South (+2km)						
Sep-22	1	6	1	17	0.02	1.00
Caledonia South (+4km)						
Sep-22	1	6	1	18	0.01	1.00

Unidentified auk and/or shearwater

2.7.1.4 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 2-32.

Table 2-32: Density and population estimate of unidentified auk and/or shearwater species on sea 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		
Caledonia South						
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	59	0.11	0.50
May-22	2	12	2	29	0.06	0.71
Jun-22	1	6	1	17	0.03	1.00
Apr-23	1	6	1	17	0.03	1.00
Caledonia South (+2km)						
May-21	4	23	4	64	0.06	0.50
Jun-21	13	75	13	162	0.21	0.28
Jul-21	9	52	9	122	0.14	0.33
May-22	3	17	3	34	0.05	0.58
Jun-22	1	6	1	17	0.02	1.00
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
Caledonia South (+4km)						
May-21	5	29	5	75	0.05	0.45
Jun-21	13	76	13	174	0.14	0.28
Jul-21	10	60	10	132	0.11	0.32
May-22	3	17	3	34	0.03	0.58
Jun-22	2	12	2	29	0.02	0.71
Sep-22	73	426	73	1,278	0.80	0.12
Mar-23	2	12	2	23	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 2-33 and Table 2-34.

2.7.2.2 Table 2-33 includes the unapportioned density and population estimates of fulmar, and Table 2-34 includes the apportioned density and population estimates of fulmar.

Table 2-33: Unapportioned density and population estimate of fulmar on sea 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		
Caledonia South						
May-21	7	41	12	76	0.19	0.38
Jun-21	7	41	12	76	0.19	0.38
Jul-21	343	2,012	343	5,437	9.57	0.05
Aug-21	4	23	4	58	0.11	0.50
Sep-21	18	104	46	157	0.49	0.24
Oct-21	2	12	2	29	0.06	0.71
Nov-21	77	444	77	1,296	2.11	0.11
Dec-21	2	12	2	23	0.06	0.71
Jan-22	3	17	3	40	0.08	0.58
Feb-22	15	81	32	135	0.39	0.26
Mar-22	1	5	1	16	0.02	1.00
Apr-22	26	150	26	334	0.71	0.20
May-22	7	40	7	98	0.19	0.38
Jun-22	17	98	29	174	0.47	0.24
Jul-22	402	2,345	694	4,707	11.15	0.05
Aug-22	1	6	1	17	0.03	1.00
Sep-22	6	35	6	70	0.17	0.41
Nov-22	2	12	2	29	0.06	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	2	12	2	35	0.06	0.71
Jan-23	1	6	1	18	0.03	1.00
Mar-23	12	70	23	133	0.33	0.29
Apr-23	4	23	4	57	0.11	0.50
Caledonia South (+2km)						
May-21	15	87	40	139	0.24	0.26
Jun-21	12	70	35	110	0.19	0.29
Jul-21	454	2,641	454	6,796	7.35	0.05
Aug-21	11	63	29	109	0.18	0.30
Sep-21	29	168	104	237	0.47	0.19
Oct-21	5	29	5	64	0.08	0.45
Nov-21	83	475	83	1,345	1.32	0.11
Dec-21	6	35	6	75	0.10	0.41
Jan-22	5	29	6	57	0.08	0.45
Feb-22	20	107	37	182	0.30	0.22
Mar-22	1	5	1	16	0.01	1.00
Apr-22	27	154	27	355	0.43	0.19
May-22	15	86	15	195	0.24	0.26
Jun-22	24	136	57	233	0.38	0.20
Jul-22	674	3,900	1,163	7,157	10.85	0.04
Aug-22	17	97	17	211	0.27	0.24
Sep-22	23	131	63	223	0.36	0.21
Nov-22	7	41	7	82	0.11	0.38
Dec-22	4	23	4	46	0.06	0.50
Jan-23	2	11	2	29	0.03	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	1	6	1	17	0.02	1.00
Mar-23	21	121	58	184	0.34	0.22
Apr-23	6	34	6	67	0.09	0.41
Caledonia South (+4km)						
May-21	17	99	46	162	0.19	0.24
Jun-21	29	169	93	250	0.32	0.19
Jul-21	563	3,381	643	7,771	6.34	0.04
Aug-21	15	86	52	132	0.16	0.26
Sep-21	72	418	244	598	0.78	0.12
Oct-21	10	58	12	122	0.11	0.32
Nov-21	89	512	89	1,386	0.96	0.11
Dec-21	13	75	23	133	0.14	0.28
Jan-22	6	35	6	75	0.07	0.41
Feb-22	29	157	71	250	0.29	0.19
Mar-22	2	11	2	27	0.02	0.71
Apr-22	30	172	30	355	0.32	0.18
May-22	17	98	23	201	0.18	0.24
Jun-22	31	180	93	284	0.34	0.18
Jul-22	1,116	6,461	1,575	12,245	12.11	0.03
Aug-22	34	195	69	367	0.37	0.17
Sep-22	30	175	82	286	0.33	0.18
Oct-22	2	12	2	35	0.02	0.71
Nov-22	8	47	8	99	0.09	0.35
Dec-22	6	35	12	65	0.07	0.41
Jan-23	9	53	23	82	0.10	0.33

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	5	29	6	58	0.05	0.45
Mar-23	28	163	82	251	0.31	0.19
Apr-23	7	40	7	80	0.07	0.38

Table 2-34: Apportioned density and population estimate of fulmar on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
May-21	41	12	76	0.19
Jun-21	41	12	76	0.19
Jul-21	2,012	343	5,437	9.56
Aug-21	23	4	58	0.11
Sep-21	104	46	157	0.49
Oct-21	12	2	29	0.06
Nov-21	444	77	1,296	2.11
Dec-21	12	2	23	0.06
Jan-22	17	3	40	0.08
Feb-22	81	32	135	0.38
Mar-22	5	1	16	0.02
Apr-22	150	26	334	0.71
May-22	40	7	98	0.19
Jun-22	98	29	174	0.47
Jul-22	2,345	694	4,707	11.14
Aug-22	6	1	17	0.03
Sep-22	35	6	70	0.17
Nov-22	12	2	29	0.06
Dec-22	12	2	35	0.06
Jan-23	6	1	18	0.03
Mar-23	70	23	133	0.33
Apr-23	23	4	57	0.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+2km)				
May-21	87	40	139	0.24
Jun-21	70	35	110	0.19
Jul-21	2,641	454	6,796	7.34
Aug-21	63	29	109	0.18
Sep-21	168	104	237	0.47
Oct-21	29	5	64	0.08
Nov-21	475	83	1,345	1.32
Dec-21	35	6	75	0.10
Jan-22	29	6	57	0.08
Feb-22	107	37	182	0.30
Mar-22	5	1	16	0.01
Apr-22	154	27	355	0.43
May-22	86	15	195	0.24
Jun-22	136	57	233	0.38
Jul-22	3,900	1,163	7,157	10.84
Aug-22	97	17	211	0.27
Sep-22	131	63	223	0.36
Nov-22	41	7	82	0.11
Dec-22	23	4	46	0.06
Jan-23	11	2	29	0.03
Feb-23	6	1	17	0.02
Mar-23	121	58	184	0.34
Apr-23	34	6	67	0.09

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South (+4km)				
May-21	99	46	162	0.19
Jun-21	169	93	250	0.32
Jul-21	3,381	643	7,771	6.33
Aug-21	86	52	132	0.16
Sep-21	418	244	598	0.78
Oct-21	58	12	122	0.11
Nov-21	512	89	1,386	0.96
Dec-21	75	23	133	0.14
Jan-22	35	6	75	0.07
Feb-22	157	71	250	0.29
Mar-22	11	2	27	0.02
Apr-22	172	30	355	0.32
May-22	98	23	201	0.18
Jun-22	180	93	284	0.34
Jul-22	6,461	1,575	12,245	12.10
Aug-22	195	69	367	0.37
Sep-22	175	82	286	0.33
Oct-22	12	2	35	0.02
Nov-22	47	8	99	0.09
Dec-22	35	12	65	0.07
Jan-23	53	23	82	0.10
Feb-23	29	6	58	0.05
Mar-23	163	82	251	0.31
Apr-23	40	7	80	0.07

2.7.3 Sooty shearwater

2.7.3.1 No sooty shearwater diver on sea were recorded in Caledonia South.

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 2-35 and Table 2-36.

2.7.4.2 Table 2-35 includes the unapportioned density and population estimates of Manx shearwater, and Table 2-36 includes the apportioned density and population estimates of Manx shearwater.

Table 2-35: Unapportioned density and population estimate of Manx shearwater on sea 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		
Caledonia South						
Jul-21	1	6	1	18	0.03	1.00
May-22	6	35	6	104	0.17	0.41
Caledonia South (+2km)						
Jun-21	7	41	7	116	0.11	0.38
Jul-21	2	12	2	29	0.03	0.71
May-22	6	34	6	103	0.09	0.41
Caledonia South (+4km)						
May-21	9	52	9	151	0.10	0.33
Jun-21	2	12	2	30	0.02	0.71
May-22	6	34	6	103	0.06	0.41
Apr-23	1	6	1	17	0.01	1.00

Table 2-36: Apportioned density and population estimate of Manx shearwater on sea in Caledonia South; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia South				
Jul-21	6	1	18	0.03
May-22	35	6	104	0.17
Caledonia South (+2km)				
Jun-21	42	8	120	0.12
Jul-21	12	2	29	0.03
May-22	34	6	103	0.09
Caledonia South (+4km)				
May-21	6	1	17	0.01
Jun-21	53	9	154	0.10
May-22	12	2	30	0.02
Apr-23	34	6	103	0.06

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 2-37.

Table 2-37: Density and population estimate of gannet on sea 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		
Caledonia South						
May-21	1	6	1	17	0.03	1.00
Jun-21	16	93	47	157	0.44	0.25
Jul-21	12	70	12	199	0.33	0.29
Aug-21	6	35	6	81	0.17	0.41
Sep-21	9	52	12	110	0.25	0.33
Oct-21	19	111	64	164	0.53	0.23
Dec-21	2	12	2	35	0.06	0.71
Jan-22	1	6	1	17	0.03	1.00
Feb-22	2	11	2	32	0.05	0.71
May-22	11	64	11	179	0.30	0.30
Jun-22	75	434	81	1,031	2.06	0.12
Jul-22	15	87	41	140	0.41	0.26
Sep-22	21	122	52	198	0.58	0.22
Feb-23	1	6	1	17	0.03	1.00
Apr-23	8	46	8	137	0.22	0.35
Caledonia South (+2km)						
May-21	2	12	2	23	0.03	0.71
Jun-21	29	168	81	284	0.47	0.19
Jul-21	12	70	12	198	0.19	0.29
Aug-21	15	86	46	126	0.24	0.26
Sep-21	15	87	40	144	0.24	0.26
Oct-21	28	162	93	232	0.45	0.19
Nov-21	2	11	2	34	0.03	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-21	2	12	2	35	0.03	0.71
Jan-22	1	6	1	17	0.02	1.00
Feb-22	4	21	4	64	0.06	0.50
May-22	12	69	12	189	0.19	0.29
Jun-22	116	659	221	1,300	1.83	0.09
Jul-22	23	133	52	214	0.37	0.21
Aug-22	3	17	6	34	0.05	0.58
Sep-22	31	177	91	268	0.49	0.18
Oct-22	3	17	3	46	0.05	0.58
Feb-23	1	6	1	17	0.02	1.00
Apr-23	8	45	8	134	0.13	0.35
Caledonia South (+4km)						
May-21	4	23	6	41	0.04	0.50
Jun-21	42	244	128	395	0.46	0.15
Jul-21	19	114	19	270	0.21	0.23
Aug-21	19	109	58	178	0.20	0.23
Sep-21	32	186	93	290	0.35	0.18
Oct-21	45	261	197	325	0.49	0.15
Nov-21	5	29	5	63	0.05	0.45
Dec-21	2	12	2	35	0.02	0.71
Jan-22	1	6	1	17	0.01	1.00
Feb-22	4	22	4	65	0.04	0.50
Apr-22	2	11	2	34	0.02	0.71
May-22	13	75	13	190	0.14	0.28
Jun-22	130	753	295	1,390	1.41	0.09

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jul-22	36	208	93	353	0.39	0.17
Aug-22	3	17	3	34	0.03	0.58
Sep-22	37	216	99	344	0.40	0.16
Oct-22	15	88	15	247	0.16	0.26
Nov-22	1	6	1	18	0.01	1.00
Feb-23	1	6	1	17	0.01	1.00
Apr-23	9	52	9	149	0.10	0.33

2.9 Turdidae

2.9.1 Unidentified thrush species

2.9.1.1 No unidentified thrush species on sea were recorded in Caledonia South.

2.10 Passeriformes

2.10.1 Unidentified passerine species

2.10.1.1 No unidentified passerine species on sea were recorded in Caledonia South.

3 References

¹ 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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