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Volume 7B Proposed Development (Offshore) Appendices

Appendix 6-1 Offshore Ornithology Baseline Characterisation Report Annex 4 Model-based and Design-based Density and Abundance Estimates of All Birds (Caledonia North)

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Volume 7B Appendix 6-1 Annex 4 Model-based and Design-based Density and Abundance Estimates of All Birds (Caledonia North)

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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 all birds recorded (in flight and on sea) in the Caledonia Offshore Wind Farm (OWF), specifically the Caledonia North 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/km²) and the Coefficient of Variation (CV) as a measure of precision.
- 1.1.1.4 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 The density and population estimates of unidentified wader species in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

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

2.1.2 Pink-footed goose

2.1.2.1 The density and population estimates of pink-footed goose in Caledonia North (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 pink-footed geese in Caledonia North; 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 North						
Jan-23	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Jan-23	1	6	1	18	0.02	1.00
Caledonia North (+4km)						
Jan-23	1	6	1	18	0.02	1.00

2.1.3 Mallard

2.1.3.1 No mallard were recorded in Caledonia North.

2.2 Laridae

2.2.1 Unidentified species

Unidentified black back gull species

2.2.1.1 The density and population estimates of unidentified black backed gull species in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
Nov-21	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Jul-21	1	6	1	18	0.01	1.00
Nov-21	1	6	1	18	0.01	1.00

Unidentified large gull species

2.2.1.2 The density and population estimates of unidentified large gull species in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jul-21	2	12	2	30	0.05	0.71
Sep-21	2	12	2	23	0.05	0.71
Oct-21	4	23	6	47	0.11	0.50
Nov-21	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
Jul-21	2	12	2	23	0.03	0.71
Sep-21	3	17	6	34	0.05	0.58
Oct-21	5	29	6	51	0.08	0.45
Nov-21	4	23	4	57	0.06	0.50
Jan-22	1	6	1	17	0.02	1.00
Oct-22	1	6	1	18	0.02	1.00
Caledonia North (+4km)						
Jul-21	2	12	2	30	0.02	0.71
Sep-21	4	23	6	41	0.04	0.50
Oct-21	5	29	6	58	0.05	0.45
Nov-21	7	41	7	82	0.07	0.38
Jan-22	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Oct-22	1	6	1	18	0.01	1.00

Unidentified gull species

2.2.1.3 The density and population estimates of unidentified gull species in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jul-21	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
Jul-21	1	6	1	17	0.02	1.00
Feb-22	1	5	1	16	0.01	1.00
Aug-22	1	6	1	17	0.02	1.00
Dec-22	1	6	1	18	0.02	1.00
Caledonia North (+4km)						
Jul-21	1	6	1	18	0.01	1.00
Aug-21	2	12	2	29	0.02	0.71
Feb-22	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 North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
<i>None recorded</i>						
Caledonia North (+4km)						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	18	0.01	1.00

2.2.2 Kittiwake

2.2.2.1 The density and population estimates of kittiwake in Caledonia North (plus the 2km buffer and plus the 4km buffer), 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 North; 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	
Caledonia North				
May-21	169	84	354	0.76
Jun-21	242	126	507	1.09
Jul-21	183	69	522	0.87
Aug-21	263	128	594	1.19
Sep-21	29	6	58	0.13
Oct-21	99	24	199	0.45
Nov-21	375	205	602	1.72
Dec-21	29	5	64	0.13
Jan-22	29	12	52	0.13
Feb-22	49	10	102	0.22
Mar-22	59	18	123	0.27
Apr-22	68	36	136	0.31
May-22	278	123	694	1.25
Jun-22	553	244	1350	2.49
Jul-22	615	295	1406	2.77
Aug-22	143	78	266	0.64

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Sep-22	57	11	138	0.26
Oct-22	12	2	34	0.05
Nov-22	36	8	82	0.16
Jan-23	6	1	17	0.03
Feb-23	46	8	115	0.21
Mar-23	12	2	36	0.05
Apr-23	61	22	176	0.27
Caledonia North (+2km)				
May-21	275	135	583	0.73
Jun-21	397	211	811	1.06
Jul-21	366	145	1008	1.04
Aug-21	426	217	918	1.14
Sep-21	74	28	131	0.20
Oct-21	200	90	326	0.53
Nov-21	548	308	850	1.46
Dec-21	91	41	142	0.24
Jan-22	28	6	51	0.07
Feb-22	94	33	163	0.25
Mar-22	75	23	149	0.20
Apr-22	116	58	247	0.31
May-22	450	189	1165	1.20
Jun-22	894	396	2165	2.39
Jul-22	995	497	2175	2.66
Aug-22	232	123	445	0.62
Sep-22	93	30	185	0.25

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-22	18	3	47	0.05
Nov-22	63	11	150	0.17
Dec-22	14	2	41	0.04
Jan-23	12	2	29	0.03
Feb-23	57	10	143	0.15
Mar-23	34	9	70	0.09
Apr-23	103	35	316	0.28
Caledonia North (+4km)				
May-21	423	206	899	0.78
Jun-21	624	334	1,268	1.17
Jul-21	673	295	1,738	1.29
Aug-21	664	341	1,419	1.24
Sep-21	88	36	158	0.16
Oct-21	304	134	502	0.55
Nov-21	806	498	1,180	1.45
Dec-21	105	48	168	0.19
Jan-22	41	12	69	0.07
Feb-22	119	56	206	0.21
Mar-22	189	81	318	0.34
Apr-22	185	90	415	0.35
May-22	704	290	1,804	1.31
Jun-22	1,393	631	3,319	2.60
Jul-22	1,553	780	3,354	2.90
Aug-22	364	190	707	0.68
Sep-22	128	37	233	0.23

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-22	24	4	53	0.04
Nov-22	77	13	178	0.14
Dec-22	31	5	86	0.06
Jan-23	24	4	47	0.04
Feb-23	87	27	174	0.16
Mar-23	48	9	97	0.09
Apr-23	168	54	557	0.31

2.2.3 Great black-backed gull

The density and population estimates of great black-backed gull in Caledonia North (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.

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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Sep-21	12	70	12	185	0.32	0.29
Oct-21	3	18	3	53	0.08	0.58
Nov-21	15	88	41	134	0.40	0.26
Dec-21	4	23	4	46	0.11	0.50
Jan-22	9	52	17	93	0.24	0.33
Feb-22	12	65	12	129	0.30	0.29
Sep-22	2	11	2	23	0.05	0.71
Oct-22	8	46	23	69	0.21	0.35
Nov-22	4	24	4	47	0.11	0.50
Dec-22	1	6	1	17	0.03	1.00
Jan-23	9	52	23	81	0.24	0.33
Feb-23	2	12	2	29	0.05	0.71
Caledonia North (+2km)						
Aug-21	3	17	3	51	0.05	0.58
Sep-21	41	233	46	444	0.62	0.16
Oct-21	23	131	23	309	0.35	0.21
Nov-21	54	308	154	491	0.82	0.14
Dec-21	7	40	11	74	0.11	0.38

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jan-22	24	136	74	204	0.36	0.20
Feb-22	19	102	27	199	0.27	0.23
Mar-22	1	5	1	16	0.01	1.00
Sep-22	7	41	7	87	0.11	0.38
Oct-22	14	82	53	112	0.22	0.27
Nov-22	10	58	29	81	0.15	0.32
Dec-22	5	29	5	65	0.08	0.45
Jan-23	17	100	35	176	0.27	0.24
Feb-23	5	29	11	46	0.08	0.45
Mar-23	2	12	2	29	0.03	0.71
Caledonia North (+4km)						
Aug-21	3	17	3	52	0.03	0.58
Sep-21	76	444	193	730	0.80	0.11
Oct-21	46	269	99	479	0.48	0.15
Nov-21	84	490	274	747	0.88	0.11
Dec-21	9	52	23	82	0.09	0.33
Jan-22	37	214	139	289	0.38	0.16
Feb-22	23	127	39	248	0.23	0.21
Mar-22	2	11	2	27	0.02	0.71
Sep-22	10	58	10	134	0.10	0.32
Oct-22	22	129	82	182	0.23	0.21
Nov-22	12	71	41	100	0.13	0.29
Dec-22	16	94	35	165	0.17	0.25
Jan-23	22	130	65	212	0.23	0.21
Feb-23	11	64	29	98	0.11	0.30
Mar-23	3	18	3	47	0.03	0.58

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Sep-21	81	14	209	0.37
Oct-21	32	7	83	0.15
Nov-21	93	36	155	0.43
Dec-21	24	4	70	0.11
Jan-22	52	18	104	0.24
Feb-22	65	13	129	0.30
Sep-22	11	2	23	0.05
Oct-22	47	14	81	0.22
Nov-22	24	4	59	0.11
Dec-22	6	1	17	0.03
Jan-23	52	18	92	0.24
Feb-23	12	2	23	0.05
Caledonia North (+2km)				
Aug-21	17	3	51	0.05
Sep-21	250	67	563	0.67
Oct-21	158	28	354	0.42
Nov-21	335	140	614	0.89
Dec-21	40	7	97	0.11
Jan-22	143	59	244	0.38
Feb-22	104	22	217	0.28
Mar-22	5	1	16	0.01
Aug-22	6	1	17	0.02
Sep-22	41	9	93	0.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-22	88	42	150	0.24
Nov-22	58	20	115	0.15
Dec-22	32	5	70	0.08
Jan-23	100	30	205	0.27
Feb-23	28	8	63	0.07
Mar-23	12	2	34	0.03
Caledonia North (+4km)				
Aug-21	17	3	52	0.03
Sep-21	467	122	946	0.84
Oct-21	294	93	553	0.53
Nov-21	533	228	976	0.96
Dec-21	52	10	116	0.09
Jan-22	220	135	323	0.39
Feb-22	130	31	261	0.23
Mar-22	11	2	27	0.02
Aug-22	6	1	17	0.01
Sep-22	58	12	134	0.10
Oct-22	136	69	215	0.24
Nov-22	71	27	137	0.13
Dec-22	98	30	203	0.18
Jan-23	130	42	242	0.23
Feb-23	64	25	109	0.11
Mar-23	18	3	48	0.03

2.2.4 Herring gull

2.2.4.1 The density and population estimates of herring gull in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
May-21	1	6	1	17	0.03	1.00
Sep-21	1	6	1	17	0.03	1.00
Oct-21	3	18	3	41	0.08	0.58
Nov-21	1	6	1	18	0.03	1.00
Dec-21	2	12	2	23	0.05	0.71
Feb-22	1	5	1	16	0.02	1.00
Mar-22	1	5	1	16	0.02	1.00
Jul-22	2	12	2	23	0.05	0.71
Oct-22	1	6	1	17	0.03	1.00
Dec-22	1	6	1	17	0.03	1.00
Mar-23	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Sep-21	1	6	1	17	0.02	1.00
Oct-21	3	17	3	40	0.05	0.58
Nov-21	8	46	8	91	0.12	0.35
Dec-21	2	11	2	28	0.03	0.71
Feb-22	1	5	1	16	0.01	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Mar-22	1	5	1	16	0.01	1.00
Jul-22	3	17	3	34	0.05	0.58
Oct-22	1	6	1	18	0.02	1.00
Dec-22	4	24	4	59	0.06	0.50
Mar-23	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
May-21	1	6	1	18	0.01	1.00
Jul-21	16	97	16	291	0.17	0.25
Sep-21	1	6	1	18	0.01	1.00
Oct-21	7	41	18	70	0.07	0.38
Nov-21	9	53	12	105	0.10	0.33
Dec-21	2	12	2	29	0.02	0.71
Feb-22	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Jun-22	1	6	1	17	0.01	1.00
Jul-22	12	70	12	181	0.13	0.29
Oct-22	1	6	1	18	0.01	1.00
Nov-22	1	6	1	18	0.01	1.00
Dec-22	5	29	5	71	0.05	0.45
Mar-23	1	6	1	18	0.01	1.00

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	6	1	17	0.03
Jul-21	12	2	30	0.05
Sep-21	6	1	17	0.03
Oct-21	27	5	64	0.12
Nov-21	7	1	21	0.03
Dec-21	12	2	23	0.05
Feb-22	5	1	16	0.02
Mar-22	5	1	16	0.02
Jul-22	12	2	23	0.05
Oct-22	6	1	17	0.03
Dec-22	6	1	17	0.03
Mar-23	6	1	18	0.03
Caledonia North (+2km)				
May-21	6	1	17	0.02
Jul-21	12	2	29	0.03
Sep-21	6	1	17	0.02
Oct-21	20	4	52	0.05
Nov-21	48	11	104	0.13
Dec-21	11	2	28	0.03
Feb-22	5	1	17	0.01
Mar-22	5	1	16	0.01
Jul-22	17	6	34	0.05
Oct-22	7	1	21	0.02

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Dec-22	27	5	73	0.07
Mar-23	6	1	17	0.02
Caledonia North (+4km)				
May-21	6	1	18	0.01
Jul-21	108	18	319	0.19
Sep-21	6	1	18	0.01
Oct-21	45	14	90	0.08
Nov-21	57	12	116	0.10
Dec-21	12	2	29	0.02
Feb-22	6	1	18	0.01
Mar-22	10	2	32	0.02
Jun-22	6	1	17	0.01
Jul-22	71	15	193	0.13
Oct-22	6	1	20	0.01
Nov-22	6	1	18	0.01
Dec-22	32	5	76	0.06
Mar-23	6	1	18	0.01

2.2.5 Common gull

2.2.5.1 The density and population estimates of common gull in Caledonia North (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 herring gull.

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

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Aug-22	2	12	2	35	0.05	0.71
Dec-22	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Sep-21	2	11	2	34	0.03	0.71
Aug-22	2	11	2	34	0.03	0.71
Dec-22	2	12	2	29	0.03	0.71
Caledonia North (+4km)						
Sep-21	2	12	2	35	0.03	0.71
Nov-21	1	6	1	18	0.01	1.00
Aug-22	2	11	2	34	0.02	0.71
Dec-22	2	12	2	29	0.02	0.71

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Aug-22	12	2	35	0.05
Dec-22	6	1	17	0.03
Caledonia North (+2km)				
Sep-21	11	2	34	0.03
Aug-22	11	2	34	0.03
Dec-22	12	2	29	0.03
Caledonia North (+4km)				
Sep-21	12	2	35	0.02
Nov-21	6	1	18	0.01
Aug-22	11	2	34	0.02
Dec-22	12	2	29	0.02

2.2.6 Lesser black-backed gull

2.2.6.1 The density and population estimates of lesser black-backed gull in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jun-22	2	11	2	34	0.05	0.71
Caledonia North (+2km)						
Jun-22	2	12	2	35	0.03	0.71
Caledonia North (+4km)						
Jul-21	3	18	3	48	0.03	0.58
May-22	1	6	1	17	0.01	1.00
Jun-22	2	12	2	35	0.02	0.71

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Jun-22	11	2	34	0.05
Caledonia North (+2km)				
Jun-22	12	2	35	0.03
Caledonia North (+4km)				
Jul-21	25	4	75	0.05
May-22	6	1	17	0.01
Jun-22	12	2	35	0.02

2.3 Sterninae

2.3.1 Unidentified species

Commic tern

2.3.1.1 The density and population estimates of commic tern in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Aug-21	2	12	2	35	0.05	0.71
May-22	4	23	4	70	0.11	0.50
Aug-22	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Aug-21	2	11	2	34	0.03	0.71
May-22	4	23	4	68	0.06	0.50
Aug-22	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Aug-21	2	12	2	35	0.02	0.71
May-22	6	35	6	81	0.06	0.41
Aug-22	1	6	1	17	0.01	1.00

Unidentified tern species

2.3.1.2 The density and population estimates of unidentified tern species in Caledonia North (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 all unidentified tern species in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
Jul-21	2	12	2	35	0.03	0.71
Caledonia North (+4km)						
Jul-21	2	12	2	36	0.02	0.71

2.3.2 Common tern

2.3.2.1 The density and population estimates of common tern in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Aug-21	3	17	3	52	0.08	0.58
Caledonia North (+2km)						
Aug-21	3	17	3	51	0.05	0.58
Caledonia North (+4km)						
Aug-21	3	17	3	52	0.03	0.58

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Aug-21	29	5	87	0.13
Aug-22	6	1	17	0.03
Caledonia North (+2km)				
Aug-21	28	5	85	0.07
Aug-22	6	1	17	0.02
Caledonia North (+4km)				
Aug-21	29	5	87	0.13
Aug-22	6	1	17	0.03

2.3.3 Arctic tern

2.3.3.1 The density and population estimates of Arctic tern in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
May-21	3	18	3	47	0.03	0.58

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-22	12	2	35	0.05
Caledonia North (+2km)				
May-21	6	1	17	0.02
May-22	11	2	34	0.03
Caledonia North (+4km)				
May-21	18	3	41	0.03
May-22	12	2	35	0.02

2.4 Stercorariidae

2.4.1 Great skua

2.4.1.1 The density and population estimates of great skua in Caledonia North (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 common tern.

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

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
May-21	1	6	1	17	0.03	1.00
Jun-21	2	12	2	30	0.05	0.71
Jul-21	1	6	1	18	0.03	1.00
Aug-21	3	17	3	41	0.08	0.58
Jul-22	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Jun-21	2	12	2	29	0.03	0.71
Jul-21	1	6	1	17	0.02	1.00
Aug-21	4	23	4	57	0.06	0.50
Jul-22	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
May-21	1	6	1	18	0.01	1.00
Jun-21	2	12	2	30	0.02	0.71
Jul-21	5	30	5	73	0.05	0.45
Aug-21	6	35	6	75	0.06	0.41
Jul-22	2	12	2	35	0.02	0.71

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	6	1	17	0.03
Jun-21	12	2	36	0.05
Jul-21	6	1	18	0.03
Aug-21	17	3	41	0.08
Jul-22	6	1	18	0.03
Caledonia North (+2km)				
May-21	6	1	17	0.02
Jun-21	12	2	34	0.03
Jul-21	6	1	17	0.02
Aug-21	23	4	57	0.06
Jul-22	6	1	17	0.02
Caledonia North (+4km)				
May-21	6	1	18	0.01
Jun-21	12	2	36	0.02
Jul-21	30	5	72	0.05
Aug-21	35	6	75	0.06
Jul-22	12	2	36	0.02

2.4.2 Arctic skua

2.4.2.1 The density and population estimates of Arctic skua in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Aug-22	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Aug-22	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Aug-22	1	6	1	17	0.01	1.00

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Aug-22	6	1	17	0.03
Caledonia North (+2km)				
Aug-22	6	1	17	0.02
Caledonia North (+4km)				
Aug-22	6	1	17	0.01

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 North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
May-21	24	140	70	204	0.64	0.20
Jun-21	31	183	130	231	0.84	0.18
Jul-21	7	41	12	71	0.19	0.38
Aug-21	15	87	35	139	0.40	0.26
Sep-21	24	139	58	220	0.64	0.20
Oct-21	12	70	18	134	0.32	0.29
Nov-21	11	64	12	129	0.29	0.30
Dec-21	26	151	58	278	0.69	0.20
Jan-22	8	46	8	98	0.21	0.35
Feb-22	52	280	113	431	1.28	0.14
Mar-22	9	48	11	91	0.22	0.33
Apr-22	6	34	6	75	0.16	0.41
May-22	83	482	174	836	2.21	0.11
Jun-22	6	34	6	91	0.16	0.41
Jul-22	28	164	53	299	0.75	0.19
Aug-22	4	23	12	35	0.11	0.50
Sep-22	52	298	143	448	1.36	0.14

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	1	6	1	17	0.03	1.00
Nov-22	14	83	18	165	0.38	0.27
Dec-22	5	29	5	76	0.13	0.45
Jan-23	2	12	2	35	0.05	0.71
Feb-23	8	46	12	86	0.21	0.35
Mar-23	14	82	47	111	0.38	0.27
Apr-23	5	28	6	56	0.13	0.45
Caledonia North (+2km)						
May-21	41	235	154	315	0.63	0.16
Jun-21	48	278	185	359	0.74	0.14
Jul-21	11	63	29	98	0.17	0.30
Aug-21	25	142	62	233	0.38	0.20
Sep-21	46	262	165	381	0.70	0.15
Oct-21	13	74	23	143	0.20	0.28
Nov-21	13	74	23	137	0.20	0.28
Dec-21	53	301	176	466	0.80	0.14
Jan-22	12	68	12	136	0.18	0.29
Feb-22	84	451	247	660	1.20	0.11
Mar-22	13	69	21	122	0.18	0.28
Apr-22	14	79	17	140	0.21	0.27
May-22	156	888	569	1,236	2.37	0.08
Jun-22	14	81	29	138	0.22	0.27
Jul-22	44	252	120	418	0.67	0.15
Aug-22	13	74	17	149	0.20	0.28
Sep-22	74	430	192	668	1.15	0.12

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	30	176	30	482	0.47	0.18
Nov-22	19	110	35	196	0.29	0.23
Dec-22	8	47	18	94	0.13	0.35
Jan-23	3	18	3	41	0.05	0.58
Feb-23	10	57	17	108	0.15	0.32
Mar-23	24	139	81	197	0.37	0.20
Apr-23	8	46	23	69	0.12	0.35
Caledonia North (+4km)						
May-21	68	398	269	527	0.71	0.12
Jun-21	74	438	266	603	0.79	0.12
Jul-21	31	188	85	333	0.34	0.18
Aug-21	44	255	151	360	0.46	0.15
Sep-21	66	385	210	590	0.69	0.12
Oct-21	26	152	58	263	0.27	0.20
Nov-21	19	111	53	187	0.20	0.23
Dec-21	85	495	291	751	0.89	0.11
Jan-22	19	110	35	185	0.20	0.23
Feb-22	112	616	325	897	1.11	0.09
Mar-22	28	151	76	254	0.27	0.19
Apr-22	16	92	29	167	0.17	0.25
May-22	217	1,262	762	1,756	2.27	0.07
Jun-22	32	185	75	306	0.33	0.18
Jul-22	63	369	211	550	0.66	0.13
Aug-22	24	137	46	235	0.25	0.20
Sep-22	91	530	256	850	0.95	0.10

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	49	288	49	675	0.52	0.14
Nov-22	22	130	53	218	0.23	0.21
Dec-22	12	71	29	118	0.13	0.29
Jan-23	4	24	4	47	0.04	0.50
Feb-23	23	133	46	225	0.24	0.21
Mar-23	29	170	100	241	0.31	0.19
Apr-23	9	52	23	80	0.09	0.33

Unidentified auk species

2.5.1.2 The density and population estimates of unidentified auk species in Caledonia North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
May-21	3	17	3	47	0.08	0.58
Jun-21	2	12	2	35	0.05	0.71
Jul-21	8	47	8	101	0.22	0.35
Aug-21	5	29	5	64	0.13	0.45
Sep-21	1	6	1	17	0.03	1.00
Oct-21	3	18	3	41	0.08	0.58
Jan-22	1	6	1	17	0.03	1.00
Feb-22	1	5	1	16	0.02	1.00
Mar-22	1	5	1	16	0.02	1.00
Apr-22	2	11	2	29	0.05	0.71
May-22	9	52	12	110	0.24	0.33
Jul-22	3	18	6	35	0.08	0.58
Aug-22	1	6	1	17	0.03	1.00
Sep-22	15	86	15	184	0.39	0.26
Oct-22	2	12	2	35	0.05	0.71
Jan-23	1	6	1	17	0.03	1.00
Feb-23	1	6	1	17	0.03	1.00
Mar-23	2	12	2	29	0.05	0.71
Caledonia North (+2km)						
May-21	3	17	3	40	0.05	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-21	2	12	2	35	0.03	0.71
Jul-21	14	81	29	144	0.22	0.27
Aug-21	18	102	18	272	0.27	0.24
Sep-21	5	28	5	57	0.07	0.45
Oct-21	8	46	17	80	0.12	0.35
Jan-22	1	6	1	17	0.02	1.00
Feb-22	3	16	3	43	0.04	0.58
Mar-22	1	5	1	16	0.01	1.00
Apr-22	6	34	6	62	0.09	0.41
May-22	13	74	28	131	0.20	0.28
Jun-22	2	12	2	29	0.03	0.71
Jul-22	6	34	6	69	0.09	0.41
Aug-22	1	6	1	17	0.02	1.00
Sep-22	26	151	64	256	0.40	0.20
Oct-22	2	12	2	35	0.03	0.71
Dec-22	2	12	2	29	0.03	0.71
Jan-23	1	6	1	18	0.02	1.00
Feb-23	1	6	1	17	0.02	1.00
Mar-23	2	12	2	29	0.03	0.71
Apr-23	6	34	6	69	0.09	0.41
Caledonia North (+4km)						
May-21	3	18	3	47	0.03	0.58
Jun-21	3	18	3	41	0.03	0.58
Jul-21	18	109	48	176	0.20	0.24
Aug-21	21	122	21	331	0.22	0.22

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-21	7	41	12	76	0.07	0.38
Oct-21	10	58	23	99	0.10	0.32
Jan-22	1	6	1	17	0.01	1.00
Feb-22	3	17	3	44	0.03	0.58
Mar-22	1	5	1	16	0.01	1.00
Apr-22	9	52	17	92	0.09	0.33
May-22	16	93	35	163	0.17	0.25
Jun-22	2	12	2	29	0.02	0.71
Jul-22	6	35	6	76	0.06	0.41
Aug-22	1	6	1	17	0.01	1.00
Sep-22	30	175	64	297	0.31	0.18
Oct-22	3	18	3	41	0.03	0.58
Dec-22	3	18	3	35	0.03	0.58
Jan-23	1	6	1	18	0.01	1.00
Feb-23	1	6	1	17	0.01	1.00
Mar-23	4	23	6	53	0.04	0.50
Apr-23	8	46	17	80	0.08	0.35

Unidentified auk and/or shearwater species

2.5.1.3 The density and population estimates of unidentified auk and/or shearwater species in Caledonia North (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 in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jun-21	1	6	1	18	0.03	1.00
Jul-21	3	18	6	36	0.08	0.58
Apr-22	1	6	1	17	0.03	1.00
May-22	4	23	4	46	0.11	0.50
Jun-22	1	6	1	17	0.03	1.00
Sep-22	1	6	1	17	0.03	1.00
Mar-23	2	12	2	35	0.05	0.71
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Jun-21	1	6	1	17	0.02	1.00
Jul-21	4	23	4	46	0.06	0.50
Apr-22	1	6	1	17	0.02	1.00
May-22	6	34	6	74	0.09	0.41
Jun-22	3	17	3	40	0.05	0.58
Aug-22	1	6	1	17	0.02	1.00
Sep-22	1	6	1	17	0.02	1.00
Mar-23	2	12	2	35	0.03	0.71
Caledonia North (+4km)						
May-21	6	35	12	64	0.06	0.41
Jun-21	1	6	1	18	0.01	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jul-21	7	42	12	73	0.08	0.38
Apr-22	2	12	2	29	0.02	0.71
May-22	6	35	6	76	0.06	0.41
Jun-22	4	23	4	46	0.04	0.50
Aug-22	1	6	1	17	0.01	1.00
Sep-22	1	6	1	17	0.01	1.00
Mar-23	2	12	2	35	0.02	0.71

2.5.2 Common guillemot

- 2.5.2.1 The density and population estimates of common guillemot in Caledonia North (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 North (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 North (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 North; plus 2km buffer and plus 4km buffer, calculated using model-based analysis. Not corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	1,675	1,129	3,054	7.71
Jun-21	984	698	1,667	4.55
Jul-21	1,671	1,130	3,011	7.83
Aug-21	111	60	234	0.54
Sep-21	707	434	1,322	3.25
Oct-21	231	151	412	1.06
Nov-21	429	297	753	1.97
Dec-21	206	137	370	0.97
Jan-22	100	57	205	0.46
Feb-22	326	220	605	1.50
Mar-22	182	114	344	0.84
Apr-22	558	379	1,032	2.57
May-22	4,625	3,354	7,913	21.30
Jun-22	1,960	1,308	3,559	9.03
Jul-22	1,221	845	2,096	5.69
Aug-22	185	113	321	0.84
Sep-22	238	85	990	1.26
Oct-22	170	89	380	0.78
Nov-22	30	15	70	0.14
Dec-22	150	110	252	0.67
Jan-23	131	78	275	0.61
Feb-23	416	275	736	1.94
Mar-23	572	401	911	2.63

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	351	200	723	1.62
Caledonia North (+2km)				
May-21	3,076	2,074	5,222	8.31
Jun-21	1,828	1,283	2,908	4.98
Jul-21	3,193	2,108	5,456	8.80
Aug-21	259	144	507	0.74
Sep-21	1,285	784	2,258	3.48
Oct-21	421	275	716	1.14
Nov-21	777	532	1,269	2.10
Dec-21	414	275	680	1.13
Jan-22	183	106	348	0.50
Feb-22	587	393	1,002	1.58
Mar-22	329	204	580	0.89
Apr-22	1,016	686	1,745	2.75
May-22	8,453	6,111	13,318	22.81
Jun-22	3,590	2,349	6,120	9.72
Jul-22	2,346	1,616	3,752	6.43
Aug-22	343	208	584	0.91
Sep-22	637	264	2,004	1.91
Oct-22	306	161	641	0.82
Nov-22	53	27	117	0.14
Dec-22	261	190	410	0.69
Jan-23	240	145	466	0.65
Feb-23	785	520	1,304	2.14
Mar-23	1,025	707	1,584	2.75
Apr-23	644	360	1,273	1.75

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	4,904	3,268	8,357	8.98
Jun-21	2,968	2,016	4,999	5.46
Jul-21	5,397	3,417	9,598	10.18
Aug-21	525	292	1,022	1.01
Sep-21	2,053	1,228	3,722	3.77
Oct-21	684	443	1,165	1.26
Nov-21	1,228	826	2,040	2.25
Dec-21	696	455	1,175	1.28
Jan-22	295	170	558	0.54
Feb-22	919	605	1,587	1.68
Mar-22	515	313	921	0.94
Apr-22	1,603	1,069	2,771	2.93
May-22	13,447	9,633	21,381	24.51
Jun-22	5,808	3,716	10,060	10.69
Jul-22	3,934	2,661	6,464	7.32
Aug-22	534	316	968	0.95
Sep-22	1,358	602	3,713	2.73
Oct-22	479	249	1,015	0.87
Nov-22	83	43	185	0.15
Dec-22	399	286	629	0.71
Jan-23	387	234	733	0.72
Feb-23	1,269	834	2,123	2.34
Mar-23	1,575	1,074	2,466	2.86
Apr-23	1,037	562	2,132	1.90

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

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	2,077	1,401	3,787	9.55
Jun-21	1,220	866	2,067	5.65
Jul-21	2,072	1,401	3,733	9.71
Aug-21	138	74	291	0.68
Sep-21	877	538	1,639	4.03
Oct-21	286	187	511	1.31
Nov-21	532	368	933	2.45
Dec-21	255	169	459	1.20
Jan-22	124	71	255	0.57
Feb-22	404	272	751	1.86
Mar-22	226	141	426	1.04
Apr-22	692	469	1,279	3.19
May-22	5,735	4,159	9,812	26.41
Jun-22	2,431	1,622	4,413	11.19
Jul-22	1,514	1,048	2,599	7.05
Aug-22	229	141	398	1.04
Sep-22	296	106	1,228	1.56
Oct-22	211	111	472	0.97
Nov-22	37	19	87	0.17
Dec-22	186	136	312	0.83
Jan-23	162	97	341	0.75
Feb-23	516	341	913	2.41
Mar-23	709	497	1,130	3.26

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	435	248	896	2.01
Caledonia North (+2km)				
May-21	3,814	2,571	6,475	10.30
Jun-21	2,266	1,591	3,606	6.17
Jul-21	3,959	2,614	6,766	10.92
Aug-21	321	178	629	0.92
Sep-21	1,593	972	2,800	4.32
Oct-21	522	340	887	1.41
Nov-21	964	659	1,573	2.60
Dec-21	514	341	843	1.41
Jan-22	227	131	431	0.62
Feb-22	728	487	1,243	1.96
Mar-22	407	252	719	1.10
Apr-22	1,259	851	2,164	3.40
May-22	10,481	7,578	16,515	28.29
Jun-22	4,452	2,913	7,589	12.05
Jul-22	2,909	2,004	4,653	7.97
Aug-22	425	258	724	1.13
Sep-22	790	328	2,485	2.37
Oct-22	380	199	795	1.02
Nov-22	66	34	145	0.18
Dec-22	324	236	508	0.86
Jan-23	298	180	578	0.81
Feb-23	974	645	1,617	2.66
Mar-23	1,271	877	1,964	3.41
Apr-23	799	447	1,578	2.17

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	6,081	4,053	10,362	11.14
Jun-21	3,681	2,500	6,199	6.77
Jul-21	6,693	4,237	11,902	12.63
Aug-21	651	362	1,267	1.26
Sep-21	2,545	1,522	4,616	4.67
Oct-21	849	549	1,445	1.56
Nov-21	1,523	1,024	2,529	2.79
Dec-21	863	564	1,457	1.58
Jan-22	366	211	691	0.67
Feb-22	1,139	750	1,967	2.08
Mar-22	638	388	1,142	1.16
Apr-22	1,988	1,325	3,436	3.63
May-22	16,675	11,945	26,513	30.40
Jun-22	7,202	4,608	12,474	13.26
Jul-22	4,879	3,299	8,016	9.08
Aug-22	663	391	1,200	1.18
Sep-22	1,684	746	4,604	3.38
Oct-22	595	309	1,258	1.08
Nov-22	103	53	229	0.19
Dec-22	494	355	779	0.89
Jan-23	480	291	909	0.89
Feb-23	1,574	1,035	2,633	2.90
Mar-23	1,953	1,332	3,057	3.55
Apr-23	1,285	697	2,644	2.36

2.5.3 Razorbill

- 2.5.3.1 The density and population estimates of razorbill in Caledonia North (plus the 2km buffer and plus the 4km buffer), calculated 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 North (plus the 2km buffer and plus the 4km buffer), calculated using design- and model-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 North (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 North; 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	
Caledonia North				
May-21	173	99	310	0.83
Jun-21	282	141	577	1.29
Jul-21	253	168	386	1.17
Aug-21	170	105	276	0.78
Sep-21	103	38	175	0.47
Oct-21	8	1	26	0.04
Dec-21	56	9	144	0.26
Feb-22	206	79	355	0.94
Mar-22	25	4	64	0.11
Apr-22	186	105	338	0.86
May-22	629	377	1,076	2.88
Jun-22	52	32	85	0.24

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jul-22	302	176	527	1.38
Aug-22	49	25	98	0.23
Sep-22	1,256	506	2,086	5.75
Oct-22	15	3	43	0.07
Nov-22	73	12	136	0.34
Dec-22	16	2	41	0.07
Jan-23	38	6	80	0.18
Feb-23	45	7	105	0.20
Mar-23	119	34	231	0.54
Apr-23	67	26	216	0.31
Caledonia North (+2km)				
May-21	339	200	583	0.93
Jun-21	480	240	982	1.28
Jul-21	442	289	687	1.19
Aug-21	287	176	468	0.76
Sep-21	159	46	313	0.42
Oct-21	8	1	24	0.02
Dec-21	96	45	214	0.26
Jan-22	8	1	25	0.02
Feb-22	375	216	544	1.00
Mar-22	47	8	89	0.13
Apr-22	334	190	598	0.90
May-22	1,061	633	1817	2.81
Jun-22	88	54	143	0.23
Jul-22	509	295	895	1.35

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Aug-22	96	51	185	0.26
Sep-22	2,021	1,043	3,201	5.38
Oct-22	58	10	161	0.15
Nov-22	113	33	195	0.30
Dec-22	46	14	94	0.12
Jan-23	44	12	93	0.12
Feb-23	82	18	171	0.22
Mar-23	204	65	372	0.54
Apr-23	118	45	378	0.32
Caledonia North (+4km)				
May-21	554	331	941	1.01
Jun-21	705	349	1451	1.26
Jul-21	670	433	1060	1.22
Aug-21	419	256	686	0.75
Sep-21	212	88	392	0.38
Oct-21	15	2	37	0.03
Dec-21	96	20	233	0.17
Jan-22	8	1	25	0.01
Feb-22	514	303	736	0.92
Mar-22	99	29	182	0.18
Apr-22	516	296	925	0.94
May-22	1,547	921	2,662	2.77
Jun-22	128	78	210	0.23
Jul-22	742	429	1,317	1.33
Aug-22	161	87	305	0.30

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Sep-22	2,665	1,314	4,158	4.78
Oct-22	61	10	159	0.11
Nov-22	146	39	284	0.26
Dec-22	68	22	125	0.12
Jan-23	76	25	138	0.14
Feb-23	111	39	204	0.20
Mar-23	340	157	543	0.61
Apr-23	182	69	583	0.33

Table 2-32: Availability bias-corrected density and population estimate of all razorbill in Caledonia North; 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	
Caledonia North				
May-21	202	116	362	0.97
Jun-21	309	155	633	1.42
Jul-21	294	195	448	1.36
Aug-21	199	123	323	0.91
Sep-21	125	46	211	0.57
Oct-21	10	1	32	0.05
Dec-21	68	11	175	0.31
Feb-22	250	95	430	1.14
Mar-22	30	4	77	0.14
Apr-22	205	116	371	0.95
May-22	731	438	1,250	3.35
Jun-22	57	36	93	0.26
Jul-22	347	202	604	1.59
Aug-22	57	30	115	0.27
Sep-22	1,519	612	2,522	6.95
Oct-22	18	3	52	0.08
Nov-22	88	15	161	0.40
Dec-22	19	3	50	0.09
Jan-23	46	8	97	0.21
Feb-23	48	8	114	0.22
Mar-23	141	41	273	0.65
Apr-23	71	27	227	0.33

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+2km)				
May-21	396	234	682	1.08
Jun-21	527	263	1,077	1.40
Jul-21	513	336	798	1.38
Aug-21	336	206	548	0.89
Sep-21	192	55	379	0.51
Oct-21	10	2	29	0.03
Dec-21	116	54	259	0.31
Jan-22	10	1	30	0.03
Feb-22	454	261	659	1.21
Mar-22	57	9	108	0.15
Apr-22	366	209	657	0.98
May-22	1,232	735	2,110	3.27
Jun-22	97	60	158	0.26
Jul-22	584	338	1,026	1.55
Aug-22	112	59	216	0.31
Sep-22	2,438	1,262	3,850	6.49
Oct-22	70	12	195	0.19
Nov-22	135	40	232	0.36
Dec-22	56	17	114	0.15
Jan-23	54	15	112	0.14
Feb-23	92	20	190	0.24
Mar-23	236	77	426	0.63
Apr-23	124	48	397	0.33

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	648	387	1,101	1.19
Jun-21	773	382	1,592	1.38
Jul-21	779	504	1,232	1.42
Aug-21	491	300	803	0.88
Sep-21	257	107	475	0.46
Oct-21	18	3	45	0.03
Dec-21	116	25	283	0.21
Jan-22	10	1	30	0.02
Feb-22	623	366	892	1.12
Mar-22	120	35	221	0.22
Apr-22	567	325	1,016	1.03
May-22	1,797	1,070	3,091	3.21
Jun-22	141	86	232	0.25
Jul-22	851	492	1,509	1.52
Aug-22	188	102	357	0.35
Sep-22	3,215	1,589	5,006	5.77
Oct-22	74	12	193	0.13
Nov-22	174	47	338	0.31
Dec-22	82	27	152	0.15
Jan-23	92	30	167	0.17
Feb-23	125	45	227	0.22
Mar-23	399	188	630	0.72
Apr-23	191	73	613	0.35

2.5.4 Puffin

- 2.5.4.1 The density and population estimates of puffin in Caledonia North (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 North (plus the 2km buffer and plus the 4km buffer, calculated using design- and model-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 North (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 North; 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 corrected for availability bias.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	127	81	205	0.59
Jun-21	77	41	154	0.36
Jul-21	97	56	173	0.45
Aug-21	1,103	710	1,764	5.04
Sep-21	30	12	54	0.14
Oct-21	60	13	117	0.28
Apr-22	245	140	428	1.13
May-22	183	119	291	0.85
Jun-22	16	8	36	0.08
Jul-22	39	17	91	0.18
Aug-22	86	45	167	0.41
Sep-22	644	327	978	2.95

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jan-23	18	3	54	0.08
Feb-23	18	3	43	0.08
Mar-23	36	6	80	0.16
Apr-23	-	-	-	-
Caledonia North (+2km)				
May-21	224	140	366	0.61
Jun-21	134	71	264	0.36
Jul-21	181	101	332	0.49
Aug-21	1,876	1,177	3,060	4.96
Sep-21	42	11	91	0.11
Oct-21	91	16	183	0.24
Apr-22	420	242	731	1.13
May-22	326	211	516	0.88
Jun-22	35	17	77	0.10
Jul-22	67	30	152	0.18
Aug-22	162	85	308	0.44
Sep-22	1,178	769	1,620	3.14
Jan-23	18	3	55	0.05
Feb-23	23	6	48	0.06
Mar-23	42	7	90	0.11
Apr-23	-	-	-	-
Caledonia North (+4km)				
May-21	349	193	215	0.64
Jun-21	203	84	107	0.37
Jul-21	290	120	157	0.53

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Aug-21	2,708	1,098	1,687	4.85
Sep-21	86	36	137	0.15
Oct-21	107	20	205	0.19
Apr-22	628	363	1,092	1.14
May-22	508	328	802	0.93
Jun-22	63	29	154	0.12
Jul-22	101	46	221	0.18
Aug-22	261	137	492	0.48
Sep-22	1,829	978	2,913	3.28
Oct-22	27	7	49	0.05
Jan-23	29	5	73	0.05
Feb-23	23	4	47	0.04
Mar-23	48	12	103	0.09
Apr-23	-	-	-	-

Table 2-34: Availability bias-corrected density and population estimate of all puffin in Caledonia North; 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	
Caledonia North				
May-21	144	92	234	0.67
Jun-21	84	44	167	0.39
Jul-21	106	61	190	0.50
Aug-21	1,258	809	2,011	5.74
Sep-21	34	14	63	0.16
Oct-21	70	15	137	0.32
Apr-22	279	160	488	1.29
May-22	208	136	332	0.97
Jun-22	18	9	39	0.09
Jul-22	43	19	101	0.20
Aug-22	98	51	190	0.46
Sep-22	750	381	1,139	3.43
Jan-23	20	4	63	0.09
Feb-23	21	4	50	0.09
Mar-23	42	7	93	0.19
Apr-23	-	-	-	-
Caledonia North (+2km)				
May-21	255	160	417	0.69
Jun-21	145	77	287	0.39
Jul-21	199	111	364	0.54
Aug-21	2,138	1,342	3,489	5.66
Sep-21	49	13	107	0.13

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Oct-21	105	18	213	0.28
Apr-22	479	276	833	1.29
May-22	372	241	588	1.00
Jun-22	38	19	85	0.11
Jul-22	75	33	169	0.20
Aug-22	184	97	351	0.50
Sep-22	1,372	896	1,887	3.65
Jan-23	21	4	64	0.06
Feb-23	27	7	56	0.07
Mar-23	49	8	105	0.13
Apr-23	-	-	-	-
Caledonia North (+4km)				
May-21	398	245	662	0.73
Jun-21	220	116	434	0.40
Jul-21	318	172	602	0.58
Aug-21	3,087	1,923	5,052	5.53
Sep-21	100	42	159	0.18
Oct-21	124	23	239	0.22
Apr-22	716	413	1,245	1.29
May-22	579	374	915	1.06
Jun-22	69	31	169	0.13
Jul-22	112	51	246	0.20
Aug-22	298	157	560	0.55
Sep-22	2,128	1,139	3,385	3.82
Oct-22	31	8	58	0.06

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jan-23	34	6	85	0.06
Feb-23	27	5	55	0.05
Mar-23	56	14	120	0.10
Apr-23	-	-	-	-

2.5.5 Black guillemot

2.5.5.1 The density and population estimates of black guillemot in Caledonia North (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 North; 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 North						
Jun-22	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Jun-22	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Jun-21	1	6	1	18	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 North; 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 North				
Jun-22	6	1	17	0.03
Caledonia North (+2km)				
Jun-22	6	1	17	0.02
Caledonia North (+4km)				
Jun-21	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 North (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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
<i>None recorded</i>						
Caledonia North (+4km)						
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 North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
<i>None recorded</i>				
Caledonia North (+2km)				
<i>None recorded</i>				
Caledonia North (+4km)				
Oct-22	6	1	18	0.01

2.6.2 Great northern diver

2.6.2.1 No great northern diver were recorded in Caledonia North.

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 North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-39.

Table 2-39: Density and population estimate of all unidentified fulmar and/or gull species in Caledonia North; 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		
Caledonia North						
<i>None recorded</i>						
Caledonia North (+2km)						
<i>None recorded</i>						
Caledonia North (+4km)						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	18	0.01	1.00

Unidentified small shearwater species

2.7.1.2 No Unidentified small shearwater species were recorded in Caledonia North.

Unidentified shearwater species

2.7.1.3 No Unidentified shearwater species were recorded in Caledonia North.

Unidentified auk and/or shearwater species

2.7.1.4 The density and population estimates of unidentified auk and/or shearwater species in Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-40.

Table 2-40: Density and population estimate of all unidentified auk and/or shearwater in Caledonia North; 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		
Caledonia North						
Jun-21	1	6	1	18	0.03	1.00
Jul-21	3	18	6	36	0.08	0.58
Apr-22	1	6	1	17	0.03	1.00
May-22	4	23	4	46	0.11	0.50
Jun-22	1	6	1	17	0.03	1.00
Sep-22	1	6	1	17	0.03	1.00
Mar-23	2	12	2	35	0.05	0.71
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Jun-21	1	6	1	17	0.02	1.00
Jul-21	4	23	4	46	0.06	0.50
Apr-22	1	6	1	17	0.02	1.00
May-22	6	34	6	74	0.09	0.41
Jun-22	3	17	3	40	0.05	0.58
Aug-22	1	6	1	17	0.02	1.00
Sep-22	1	6	1	17	0.02	1.00
Mar-23	2	12	2	35	0.03	0.71
Caledonia North (+4km)						
May-21	6	35	12	64	0.06	0.41

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-21	1	6	1	18	0.01	1.00
Jul-21	7	42	12	73	0.08	0.38
Apr-22	2	12	2	29	0.02	0.71
May-22	6	35	6	76	0.06	0.41
Jun-22	4	23	4	46	0.04	0.50
Aug-22	1	6	1	17	0.01	1.00
Sep-22	1	6	1	17	0.01	1.00
Mar-23	2	12	2	35	0.02	0.71

2.7.2 Fulmar

2.7.2.1 The density and population estimates of fulmar in Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-41 and Table 2-42.

2.7.2.2 Table 2-41 includes the unapportioned density and population estimates of fulmar, and Table 2-42 includes the apportioned density and population estimates of fulmar.

Table 2-41: Unapportioned density and population estimate of all fulmar in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
May-21	25	146	82	210	0.67	0.20
Jun-21	21	124	53	201	0.57	0.22
Jul-21	78	462	343	622	2.12	0.11
Aug-21	69	400	238	556	1.83	0.12
Sep-21	24	139	81	209	0.64	0.20
Oct-21	1	6	1	18	0.03	1.00
Nov-21	10	58	10	123	0.27	0.32
Dec-21	39	226	52	440	1.04	0.16
Jan-22	12	69	12	133	0.32	0.29
Feb-22	12	65	32	92	0.30	0.29
Mar-22	6	32	16	48	0.15	0.41
Apr-22	9	52	17	92	0.24	0.33
May-22	10	58	29	87	0.27	0.32
Jun-22	44	251	120	382	1.15	0.15
Jul-22	179	1,048	427	1,762	4.80	0.07
Aug-22	25	144	75	231	0.66	0.20
Sep-22	11	63	40	92	0.29	0.30
Nov-22	70	413	230	637	1.89	0.12
Dec-22	22	128	23	256	0.59	0.21

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jan-23	9	52	17	104	0.24	0.33
Feb-23	6	35	17	52	0.16	0.41
Mar-23	24	141	53	234	0.65	0.20
Apr-23	5	28	6	56	0.13	0.45
Caledonia North (+2km)						
May-21	44	252	154	337	0.67	0.15
Jun-21	36	208	104	324	0.55	0.17
Jul-21	141	813	588	1,026	2.17	0.08
Aug-21	123	698	459	976	1.86	0.09
Sep-21	29	165	97	250	0.44	0.19
Oct-21	1	6	1	17	0.02	1.00
Nov-21	28	160	29	354	0.43	0.19
Dec-21	61	347	119	648	0.92	0.13
Jan-22	27	153	51	267	0.41	0.19
Feb-22	23	123	75	172	0.33	0.21
Mar-22	8	43	11	74	0.11	0.35
Apr-22	20	112	56	191	0.30	0.22
May-22	21	120	63	182	0.32	0.22
Jun-22	84	485	242	756	1.29	0.11
Jul-22	287	1,643	876	2,444	4.38	0.06
Aug-22	40	229	126	372	0.61	0.16
Sep-22	15	87	52	139	0.23	0.26
Nov-22	119	686	421	980	1.83	0.09
Dec-22	36	212	65	417	0.56	0.17
Jan-23	16	94	41	158	0.25	0.25
Feb-23	13	74	40	108	0.20	0.28

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Mar-23	32	186	70	319	0.50	0.18
Apr-23	13	74	23	154	0.20	0.28
Caledonia North (+4km)						
May-21	62	363	217	509	0.65	0.13
Jun-21	53	314	201	450	0.56	0.14
Jul-21	215	1,302	1,042	1,581	2.34	0.07
Aug-21	179	1,039	702	1,388	1.87	0.07
Sep-21	54	315	199	473	0.57	0.14
Oct-21	1	6	1	18	0.01	1.00
Nov-21	45	263	45	596	0.47	0.15
Dec-21	87	507	239	897	0.91	0.11
Jan-22	37	214	116	313	0.38	0.16
Feb-22	37	204	116	303	0.37	0.16
Mar-22	22	119	59	194	0.21	0.21
Apr-22	24	138	69	224	0.25	0.20
May-22	30	174	76	297	0.31	0.18
Jun-22	130	751	387	1,133	1.35	0.09
Jul-22	405	2,370	1,598	3,260	4.25	0.05
Aug-22	62	355	229	515	0.64	0.13
Sep-22	19	111	52	169	0.20	0.23
Nov-22	167	985	655	1,333	1.77	0.08
Dec-22	60	354	147	578	0.64	0.13
Jan-23	26	153	65	271	0.27	0.20
Feb-23	21	121	75	173	0.22	0.22
Mar-23	55	323	123	540	0.58	0.13
Apr-23	27	155	80	258	0.28	0.19

Table 2-42: Apportioned density and population estimate of all fulmar in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
May-21	146	69	221	0.67
Jun-21	124	36	213	0.57
Jul-21	462	290	669	2.11
Aug-21	399	250	561	1.83
Sep-21	139	48	255	0.64
Oct-21	6	1	18	0.03
Nov-21	59	10	129	0.27
Dec-21	226	39	464	1.03
Jan-22	69	15	162	0.32
Feb-22	65	22	113	0.30
Mar-22	32	17	53	0.15
Apr-22	52	17	92	0.24
May-22	58	18	93	0.27
Jun-22	250	120	399	1.14
Jul-22	1,048	409	1,815	4.80
Aug-22	144	72	236	0.66
Sep-22	63	12	121	0.29
Nov-22	412	219	636	1.89
Dec-22	128	22	256	0.59
Jan-23	52	13	121	0.24
Feb-23	35	13	69	0.16
Mar-23	141	55	246	0.65
Apr-23	28	5	62	0.13

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+2km)				
May-21	252	138	360	0.67
Jun-21	209	104	336	0.56
Jul-21	813	524	1,119	2.16
Aug-21	698	459	970	1.86
Sep-21	165	74	279	0.44
Oct-21	6	1	17	0.02
Nov-21	159	28	382	0.42
Dec-21	347	111	637	0.92
Jan-22	154	49	306	0.41
Feb-22	124	54	209	0.33
Mar-22	42	17	80	0.11
Apr-22	112	47	202	0.30
May-22	120	51	194	0.32
Jun-22	485	208	854	1.29
Jul-22	1,642	807	2,513	4.37
Aug-22	229	119	384	0.61
Sep-22	87	24	168	0.23
Nov-22	686	424	998	1.83
Dec-22	212	49	400	0.56
Jan-23	94	30	176	0.25
Feb-23	74	32	125	0.20
Mar-23	186	69	330	0.50
Apr-23	74	17	154	0.20

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	363	199	545	0.65
Jun-21	314	196	450	0.56
Jul-21	1,302	914	1,660	2.34
Aug-21	1,039	685	1,434	1.86
Sep-21	315	164	520	0.57
Oct-21	6	1	18	0.01
Nov-21	263	48	613	0.47
Dec-21	507	216	868	0.91
Jan-22	214	104	365	0.38
Feb-22	204	94	325	0.37
Mar-22	119	52	199	0.21
Apr-22	138	66	231	0.25
May-22	174	64	320	0.31
Jun-22	751	341	1,260	1.35
Jul-22	2,370	1,551	3,289	4.25
Aug-22	355	217	527	0.64
Sep-22	111	34	198	0.20
Nov-22	990	621	1,384	1.78
Dec-22	354	145	601	0.63
Jan-23	154	50	277	0.28
Feb-23	121	61	185	0.22
Mar-23	328	130	566	0.59
Apr-23	154	63	258	0.28

2.7.3 Sooty shearwater

2.7.3.1 No sooty shearwater were recorded in Caledonia North.

2.7.4 Manx shearwater

2.7.4.1 The density and population estimates of Manx shearwater in Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-43 and Table 2-44.

2.7.4.2 Table 2-43 includes the unapportioned density and population estimates of Manx shearwater, and Table 2-44 includes the apportioned density and population estimates of Manx shearwater.

Table 2-43: Unapportioned density and population estimate of all Manx shearwater in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jul-21	1	6	1	18	0.03	1.00
May-22	2	12	2	23	0.05	0.71
Caledonia North (+2km)						
Jul-21	1	6	1	17	0.02	1.00
May-22	2	11	2	28	0.03	0.71
Caledonia North (+4km)						
Jun-21	1	6	1	18	0.01	1.00
Jul-21	1	6	1	18	0.01	1.00
May-22	3	17	6	35	0.03	0.58

Table 2-44: Apportioned density and population estimate of all Manx shearwater in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North				
Jul-21	6	1	18	0.03
May-22	12	2	23	0.05
Caledonia North (+2km)				
Jul-21	6	1	17	0.02
May-22	11	2	28	0.03
Caledonia North (+4km)				
Jun-21	6	1	18	0.01
Jul-21	6	1	18	0.01
May-22	17	3	35	0.03

2.8 Sulidae

2.8.1 Gannet

2.8.1.1 The density and population estimates of gannet species in Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-45.

Table 2-45: Unapportioned density and population estimate of all gannet in Caledonia North; 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 North						
May-21	1	6	1	17	0.03	1.00
Jun-21	42	248	89	497	1.14	0.15
Jul-21	3	18	3	53	0.08	0.58
Aug-21	12	70	29	116	0.32	0.29
Sep-21	25	145	35	267	0.66	0.20
Oct-21	37	216	99	333	0.99	0.16
Nov-21	4	23	6	47	0.11	0.50
Dec-21	2	12	2	23	0.05	0.71
Apr-22	3	17	6	34	0.08	0.58
May-22	1	6	1	17	0.03	1.00
Jun-22	21	120	74	171	0.55	0.22
Jul-22	5	29	6	59	0.13	0.45
Aug-22	2	12	2	23	0.05	0.71
Sep-22	12	69	23	138	0.32	0.29
Oct-22	6	35	6	93	0.16	0.41
Feb-23	2	12	2	29	0.05	0.71
Caledonia North (+2km)						
May-21	7	40	11	74	0.11	0.38

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-21	47	272	81	521	0.72	0.15
Jul-21	5	29	6	63	0.08	0.45
Aug-21	20	113	34	204	0.30	0.22
Sep-21	41	233	97	398	0.62	0.16
Oct-21	61	349	206	497	0.93	0.13
Nov-21	5	29	6	57	0.08	0.45
Dec-21	2	11	2	28	0.03	0.71
Apr-22	3	17	3	34	0.05	0.58
May-22	4	23	4	46	0.06	0.50
Jun-22	36	208	121	294	0.55	0.17
Jul-22	13	74	34	120	0.20	0.28
Aug-22	6	34	6	69	0.09	0.41
Sep-22	28	163	99	227	0.43	0.19
Oct-22	7	41	7	100	0.11	0.38
Dec-22	1	6	1	18	0.02	1.00
Jan-23	1	6	1	18	0.02	1.00
Feb-23	5	29	6	51	0.08	0.45
Caledonia North (+4km)						
May-21	8	47	12	82	0.08	0.35
Jun-21	51	302	101	586	0.54	0.14
Jul-21	9	55	18	97	0.10	0.33
Aug-21	26	151	70	255	0.27	0.20
Sep-21	60	350	187	532	0.63	0.13
Oct-21	89	520	316	754	0.93	0.11
Nov-21	6	35	6	70	0.06	0.41

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-21	2	12	2	29	0.02	0.71
Apr-22	4	23	6	40	0.04	0.50
May-22	7	41	12	81	0.07	0.38
Jun-22	74	428	260	630	0.77	0.12
Jul-22	25	146	59	263	0.26	0.20
Aug-22	7	40	11	74	0.07	0.38
Sep-22	46	268	151	402	0.48	0.15
Oct-22	10	59	18	123	0.11	0.32
Dec-22	3	18	3	35	0.03	0.58
Jan-23	1	6	1	18	0.01	1.00
Feb-23	6	35	12	64	0.06	0.41
Apr-23	1	6	1	17	0.01	1.00

2.9 Turdidae

2.9.1 Unidentified thrush species

2.9.1.1 The density and population estimates of unidentified thrush species in Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-46.

Table 2-46: Density and population estimate of all unidentified thrush species in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Oct-22	4	23	4	58	0.11	0.50
Caledonia North (+2km)						
Oct-22	105	617	105	1,733	1.63	0.10
Caledonia North (+4km)						
Oct-22	214	1,257	317	2,460	2.26	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 Caledonia North (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-47.

Table 2-47: Density and population estimate of all unidentified passerine species in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Oct-22	14	81	14	243	0.37	0.27
Caledonia North (+2km)						
Oct-22	17	100	17	276	0.27	0.24
Caledonia North (+4km)						
Oct-22	57	335	57	693	0.06	0.13

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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