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Volume 7B Proposed Development (Offshore) Appendices

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

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Volume 7B Appendix 6-1 Annex 6 Design-based Density and Abundance Estimates of Birds on Sea (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 birds recorded on sea in the Caledonia Offshore Wind Farm (OWF), specifically the Caledonia North 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 for Caledonia North.

2.1.2 Pink-footed goose

2.1.2.1 No pink-footed goose on sea were recorded for Caledonia North.

2.1.3 Mallard

2.1.3.1 No mallard on sea were recorded for Caledonia North.

2.2 Laridae

2.2.1 Unidentified species

Unidentified black-backed gull species

2.2.1.1 No unidentified black-backed gull species on sea were recorded in Caledonia North.

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 2-1.

Table 2-1: Density and population estimate of unidentified large gull species on sea 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	29	0.03	0.71
Sep-21	3	17	3	34	0.05	0.58
Oct-21	5	29	6	51	0.08	0.45
Nov-21	2	11	2	34	0.03	0.71
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	5	29	5	64	0.05	0.45
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 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 2–2.

Table 2–2: Density and population estimate of unidentified gull species on sea 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
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
Dec-22	1	6	1	18	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 North.

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, calculated using design-based analysis) have been presented in Table 2-3 and Table 2-4.

2.2.2.2 Table 2-3 includes the unapportioned density and population estimates of kittiwakes, and Table 2-4 includes the apportioned density and population estimates of kittiwakes.

Table 2-3: Unapportioned density and population estimate of kittiwake on sea 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	4	23	4	58	0.11	0.50
Jul-21	21	124	21	284	0.57	0.22
Aug-21	2	12	2	29	0.05	0.71
Oct-21	1	6	1	18	0.03	1.00
Nov-21	3	18	6	35	0.08	0.58
Feb-22	5	27	5	59	0.12	0.45
Mar-22	2	11	2	32	0.05	0.71
Apr-22	1	6	1	17	0.03	1.00
May-22	122	708	221	1,230	3.24	0.09
Jun-22	3	17	3	51	0.08	0.58
Jul-22	1	6	1	18	0.03	1.00
Oct-22	1	6	1	17	0.03	1.00
Nov-22	2	12	2	35	0.05	0.71
Feb-23	3	17	3	40	0.08	0.58
Mar-23	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
May-21	6	34	6	69	0.09	0.41
Jun-21	2	12	2	29	0.03	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jul-21	117	674	117	1,822	1.80	0.09
Aug-21	2	11	2	28	0.03	0.71
Oct-21	4	23	4	46	0.06	0.50
Nov-21	7	40	11	80	0.11	0.38
Dec-21	1	6	1	17	0.02	1.00
Feb-22	13	70	27	107	0.19	0.28
Mar-22	2	11	2	32	0.03	0.71
Apr-22	1	6	1	17	0.02	1.00
May-22	273	1,555	638	2,540	4.14	0.06
Jun-22	41	237	41	640	0.63	0.16
Jul-22	1	6	1	17	0.02	1.00
Aug-22	2	11	2	34	0.03	0.71
Sep-22	1	6	1	17	0.02	1.00
Oct-22	1	6	1	18	0.02	1.00
Nov-22	4	23	4	58	0.06	0.50
Dec-22	1	6	1	18	0.02	1.00
Feb-23	4	23	4	57	0.06	0.50
Mar-23	3	17	3	35	0.05	0.58
Caledonia North (+4km)						
May-21	7	41	7	82	0.07	0.38
Jun-21	3	18	3	47	0.03	0.58
Jul-21	395	2,392	569	4,693	4.29	0.05
Aug-21	9	52	17	93	0.09	0.33
Sep-21	1	6	1	18	0.01	1.00
Oct-21	5	29	5	64	0.05	0.45

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Nov-21	8	47	8	88	0.08	0.35
Dec-21	1	6	1	17	0.01	1.00
Feb-22	15	83	44	132	0.15	0.26
Mar-22	5	27	5	59	0.05	0.45
Apr-22	1	6	1	17	0.01	1.00
May-22	315	1,832	762	3,006	3.29	0.06
Jun-22	88	508	88	1,098	0.91	0.11
Jul-22	85	497	85	1,475	0.89	0.11
Aug-22	9	52	9	132	0.09	0.33
Sep-22	2	12	2	29	0.02	0.71
Oct-22	1	6	1	18	0.01	1.00
Nov-22	4	24	4	59	0.04	0.50
Dec-22	1	6	1	18	0.01	1.00
Feb-23	4	23	4	58	0.04	0.50
Mar-23	3	18	3	35	0.03	0.58

Table 2-4: Apportioned density and population estimate of kittiwake on sea 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	23	4	58	0.11
Jul-21	130	22	302	0.59
Aug-21	12	2	29	0.05
Oct-21	6	1	18	0.03
Nov-21	18	6	35	0.08
Feb-22	27	5	59	0.12
Mar-22	11	2	32	0.05
Apr-22	6	1	17	0.03
May-22	708	221	1,230	3.24
Jun-22	17	3	51	0.08
Jul-22	6	1	18	0.03
Oct-22	6	1	17	0.03
Nov-22	12	2	35	0.05
Feb-23	17	3	40	0.08
Mar-23	6	1	18	0.03
Caledonia North (+2km)				
May-21	34	6	69	0.09
Jun-21	12	2	29	0.03
Jul-21	680	118	1,839	1.81
Aug-21	11	2	28	0.03
Oct-21	23	4	46	0.06
Nov-21	40	11	80	0.11
Dec-21	6	1	17	0.02

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Feb-22	73	28	115	0.19
Mar-22	11	2	32	0.03
Apr-22	6	1	17	0.02
May-22	1,555	638	2,540	4.14
Jun-22	237	41	640	0.63
Jul-22	6	1	17	0.02
Aug-22	11	2	34	0.03
Sep-22	6	1	17	0.02
Oct-22	6	1	18	0.02
Nov-22	23	4	58	0.06
Dec-22	8	1	23	0.02
Feb-23	23	4	57	0.06
Mar-23	17	3	35	0.05
Caledonia North (+4km)				
May-21	41	7	82	0.07
Jun-21	18	3	47	0.03
Jul-21	2,398	570	4,710	4.30
Aug-21	64	19	122	0.11
Sep-21	6	1	18	0.01
Oct-21	29	5	64	0.05
Nov-21	47	8	88	0.08
Dec-21	6	1	17	0.01
Feb-22	86	45	140	0.15
Mar-22	27	5	59	0.05
Apr-22	6	1	17	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
May-22	1,832	762	3,006	3.29
Jun-22	508	88	1,098	0.91
Jul-22	497	85	1,475	0.89
Aug-22	52	9	132	0.09
Sep-22	12	2	29	0.02
Oct-22	6	1	18	0.01
Nov-22	24	4	59	0.04
Dec-22	7	1	21	0.01
Feb-23	23	4	58	0.04
Mar-23	18	3	35	0.03

2.2.3 Great black-backed gull

2.2.3.1 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 2-5 and Table 2-6.

2.2.3.2 Table 2-5 includes the unapportioned density and population estimates of great black-backed gull, and Table 2-6 includes the apportioned density and population estimates of great black-backed gull.

Table 2-5: Unapportioned density and population estimate of great black-backed gull on sea 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	8	46	8	116	0.21	0.35
Oct-21	3	18	3	53	0.08	0.58
Nov-21	9	53	23	82	0.24	0.33
Dec-21	2	12	2	35	0.05	0.71
Jan-22	6	35	12	69	0.16	0.41
Feb-22	8	43	8	86	0.20	0.35
Oct-22	6	35	12	58	0.16	0.41
Nov-22	1	6	1	18	0.03	1.00
Jan-23	1	6	1	17	0.03	1.00
Feb-23	2	12	2	23	0.05	0.71
Caledonia North (+2km)						
Sep-21	23	131	46	256	0.35	0.21
Oct-21	18	103	18	223	0.27	0.24
Nov-21	42	240	120	382	0.64	0.15
Dec-21	3	17	3	40	0.05	0.58
Jan-22	16	91	40	148	0.24	0.25
Feb-22	9	48	9	97	0.13	0.33
Sep-22	1	6	1	17	0.02	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	11	65	35	100	0.17	0.30
Nov-22	1	6	1	17	0.02	1.00
Dec-22	1	6	1	18	0.02	1.00
Jan-23	7	41	7	111	0.11	0.38
Feb-23	3	17	6	34	0.05	0.58
Mar-23	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Sep-21	42	245	82	426	0.44	0.15
Oct-21	40	234	82	409	0.42	0.16
Nov-21	55	321	181	485	0.58	0.13
Dec-21	3	17	3	47	0.03	0.58
Jan-22	27	156	104	214	0.28	0.19
Feb-22	11	61	17	121	0.11	0.30
Sep-22	4	23	4	58	0.04	0.50
Oct-22	19	112	65	164	0.20	0.23
Nov-22	1	6	1	18	0.01	1.00
Dec-22	3	18	3	53	0.03	0.58
Jan-23	10	59	12	124	0.11	0.32
Feb-23	5	29	12	46	0.05	0.45
Mar-23	2	12	2	29	0.02	0.71

Table 2-6: Apportioned density and population estimate of great black-backed gull on sea 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	58	10	139	0.27
Oct-21	32	7	83	0.15
Nov-21	58	24	97	0.27
Dec-21	12	2	35	0.05
Jan-22	35	12	69	0.16
Feb-22	43	8	86	0.20
Oct-22	35	12	58	0.16
Nov-22	6	1	18	0.03
Jan-23	6	1	17	0.03
Feb-23	12	2	23	0.05
Caledonia North (+2km)				
Sep-21	148	49	290	0.39
Oct-21	129	23	268	0.34
Nov-21	249	122	409	0.66
Dec-21	17	3	40	0.05
Jan-22	91	40	148	0.24
Feb-22	50	9	104	0.13
Sep-22	6	1	17	0.02
Oct-22	70	36	115	0.19
Nov-22	6	1	17	0.02
Dec-22	8	1	23	0.02
Jan-23	41	7	111	0.11
Feb-23	17	6	34	0.05

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Mar-23	6	1	17	0.02
Caledonia North (+4km)				
Sep-21	268	88	467	0.48
Oct-21	259	87	459	0.46
Nov-21	346	186	538	0.62
Dec-21	17	3	47	0.03
Jan-22	156	104	214	0.28
Feb-22	63	17	129	0.11
Sep-22	23	4	58	0.04
Oct-22	118	66	180	0.21
Nov-22	6	1	18	0.01
Dec-22	21	4	62	0.04
Jan-23	59	12	124	0.11
Feb-23	29	12	46	0.05
Mar-23	12	2	29	0.02

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 2–7 and Table 2–8.

2.2.4.2 Table 2–7 includes the unapportioned density and population estimates of herring gull, and Table 2–8 includes the apportioned density and population estimates of herring gull.

Table 2–7: Unapportioned density and population estimate of herring gull on sea 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
Oct-21	2	12	2	29	0.05	0.71
Nov-21	1	6	1	18	0.03	1.00
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
Mar-23	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
May-21	1	6	1	17	0.02	1.00
Oct-21	2	11	2	29	0.03	0.71
Nov-21	8	46	11	97	0.12	0.35
Feb-22	1	5	1	16	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Jul-22	3	17	6	34	0.05	0.58
Oct-22	1	6	1	18	0.02	1.00
Dec-22	2	12	2	35	0.03	0.71
Mar-23	1	6	1	17	0.02	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North (+4km)						
May-21	1	6	1	18	0.01	1.00
Jul-21	16	97	16	291	0.17	0.25
Oct-21	6	35	12	64	0.06	0.41
Nov-21	9	53	12	105	0.10	0.33
Feb-22	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Jul-22	3	18	6	35	0.03	0.58
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
Mar-23	1	6	1	18	0.01	1.00

Table 2–8: Apportioned density and population estimate of herring gull on sea 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
Oct-21	21	4	46	0.10
Nov-21	7	1	21	0.03
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
Mar-23	6	1	18	0.03
Caledonia North (+2km)				
May-21	6	1	17	0.02
Jul-21	12	2	29	0.03
Oct-21	14	3	35	0.04
Nov-21	48	11	104	0.13
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
Dec-22	15	3	44	0.04
Mar-23	6	1	17	0.02
Caledonia North (+4km)				
May-21	6	1	18	0.01
Jul-21	108	18	319	0.19
Oct-21	39	13	72	0.07

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Nov-21	57	12	116	0.10
Feb-22	6	1	18	0.01
Mar-22	10	2	32	0.02
Jul-22	18	6	35	0.03
Oct-22	6	1	20	0.01
Nov-22	6	1	18	0.01
Dec-22	14	2	41	0.03
Mar-23	6	1	18	0.01

2.2.5 Common gull

2.2.5.1 No common gull on sea were recorded in Caledonia North.

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 2-9 and Table 2-10.

2.2.6.2 Table 2-9 includes the unapportioned density and population estimates of lesser black-backed gull, and Table 2-10 includes the apportioned density and population estimates of lesser black-backed gull.

Table 2-9: Unapportioned density and population estimate of lesser black-backed gull on sea 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)						
Jul-22	2	12	2	36	0.02	0.71

Table 2–10: Apportioned density and population estimate of lesser black-backed gull on sea 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)				
Jun-22	13	2	39	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 2–11.

Table 2–11: Density and population estimate of unidentified commic tern species on sea 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-22	2	12	2	35	0.05	0.71
Caledonia North (+2km)						
May-22	2	11	2	34	0.03	0.71
Caledonia North (+4km)						
Jun-21	4	23	4	58	0.04	0.50

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 2-12.

Table 2-12: Density and population estimate of unidentified tern species on sea 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 No common tern were recorded in Caledonia North.

2.3.3 Arctic tern

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

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 2–13.

Table 2–13: Unapportioned density and population estimate of great skua on sea 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-22	1	6	1	18	0.03	1.00
Caledonia North (+2km)						
Jun-21	1	6	1	17	0.02	1.00
Jun-22	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Jun-21	1	6	1	18	0.01	1.00
Jul-21	2	12	2	36	0.02	0.71
Jul-22	1	6	1	18	0.01	1.00

Table 2–14: Apportioned density and population estimate of great skua on sea 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-21	6	1	18	0.03
Jul-22	6	1	18	0.03
Caledonia North (+2km)				
Jun-21	6	1	17	0.02
Jun-22	6	1	17	0.02
Caledonia North (+4km)				
Jun-21	6	1	18	0.01
Jul-21	12	2	36	0.02
Jul-22	6	1	18	0.01

2.4.2 Arctic skua

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

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 2–15.

Table 2-15: Density and population estimate of unidentified guillemot and /or razorbill on sea 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	23	134	64	204	0.61	0.21
Jun-21	29	171	124	213	0.78	0.19
Jul-21	7	41	12	71	0.19	0.38
Aug-21	15	87	35	139	0.40	0.26
Sep-21	22	127	52	220	0.58	0.21
Oct-21	3	18	6	35	0.08	0.58
Nov-21	8	47	12	94	0.22	0.35
Dec-21	26	151	52	272	0.69	0.20
Jan-22	4	23	4	58	0.11	0.50
Feb-22	52	280	108	442	1.28	0.14
Mar-22	7	37	7	80	0.17	0.38
Apr-22	5	29	5	63	0.13	0.45
May-22	83	482	168	830	2.21	0.11
Jun-22	6	34	6	91	0.16	0.41
Jul-22	27	158	41	304	0.72	0.19
Aug-22	4	23	12	35	0.11	0.50
Sep-22	52	298	143	442	1.36	0.14
Oct-22	1	6	1	17	0.03	1.00
Nov-22	14	83	14	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	5	29	6	63	0.13	0.45
Mar-23	14	82	47	111	0.38	0.27

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Apr-23	5	28	6	56	0.13	0.45
Caledonia North (+2km)						
May-21	36	206	114	292	0.55	0.17
Jun-21	44	255	180	330	0.68	0.15
Jul-21	11	63	29	98	0.17	0.30
Aug-21	25	142	57	233	0.38	0.20
Sep-21	44	250	148	364	0.67	0.15
Oct-21	4	23	6	40	0.06	0.50
Nov-21	10	57	17	108	0.15	0.32
Dec-21	53	301	170	449	0.80	0.14
Jan-22	8	45	11	91	0.12	0.35
Feb-22	83	445	247	649	1.19	0.11
Mar-22	11	58	16	112	0.15	0.30
Apr-22	13	73	17	140	0.19	0.28
May-22	156	888	587	1,219	2.37	0.08
Jun-22	14	81	29	138	0.22	0.27
Jul-22	41	235	109	378	0.63	0.16
Aug-22	13	74	17	154	0.20	0.28
Sep-22	73	424	186	680	1.13	0.12
Oct-22	2	12	2	29	0.03	0.71
Nov-22	19	110	35	196	0.29	0.23
Dec-22	8	47	12	94	0.13	0.35
Jan-23	3	18	3	41	0.05	0.58
Feb-23	7	40	7	86	0.11	0.38
Mar-23	22	128	75	186	0.34	0.21
Apr-23	8	46	23	69	0.12	0.35

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North (+4km)						
May-21	62	363	217	515	0.65	0.13
Jun-21	64	379	254	503	0.68	0.13
Jul-21	31	188	85	333	0.34	0.18
Aug-21	44	255	145	360	0.46	0.15
Sep-21	61	356	199	532	0.64	0.13
Oct-21	8	47	18	76	0.08	0.35
Nov-21	15	88	35	140	0.16	0.26
Dec-21	77	448	285	629	0.80	0.11
Jan-22	15	87	23	156	0.16	0.26
Feb-22	111	611	363	886	1.10	0.09
Mar-22	26	140	54	248	0.25	0.20
Apr-22	15	86	17	161	0.15	0.26
May-22	217	1,262	756	1,715	2.27	0.07
Jun-22	32	185	81	300	0.33	0.18
Jul-22	60	351	193	515	0.63	0.13
Aug-22	24	137	52	235	0.25	0.20
Sep-22	88	513	221	815	0.92	0.11
Oct-22	2	12	2	29	0.02	0.71
Nov-22	21	124	41	212	0.22	0.22
Dec-22	12	71	29	124	0.13	0.29
Jan-23	4	24	4	53	0.04	0.50
Feb-23	10	58	17	110	0.10	0.32
Mar-23	27	159	94	229	0.29	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 2-16.

Table 2-16: Density and population estimate of unidentified auk species on sea 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	41	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
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	104	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	178	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	23	0.05	0.71
Caledonia North (+2km)						
May-21	3	17	3	40	0.05	0.58
Jun-21	2	12	2	35	0.03	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jul-21	14	81	29	150	0.22	0.27
Aug-21	18	102	18	272	0.27	0.24
Sep-21	5	28	6	57	0.07	0.45
Oct-21	8	46	17	80	0.12	0.35
Feb-22	3	16	3	43	0.04	0.58
Mar-22	1	5	1	16	0.01	1.00
Apr-22	6	34	11	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	11	69	0.09	0.41
Caledonia North (+4km)						
May-21	3	18	3	47	0.03	0.58
Jun-21	3	18	3	47	0.03	0.58
Jul-21	18	109	42	176	0.20	0.24
Aug-21	21	122	21	314	0.22	0.22
Sep-21	7	41	12	76	0.07	0.38
Oct-21	10	58	23	99	0.10	0.32

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-22	3	17	3	44	0.03	0.58
Mar-22	1	5	1	16	0.01	1.00
Apr-22	8	46	12	86	0.08	0.35
May-22	16	93	35	169	0.17	0.25
Jun-22	2	12	2	29	0.02	0.71
Jul-22	6	35	6	70	0.06	0.41
Aug-22	1	6	1	17	0.01	1.00
Sep-22	30	175	64	291	0.31	0.18
Oct-22	3	18	3	47	0.03	0.58
Dec-22	3	18	6	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	4	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 2–17.

Table 2–17: Density and population estimate of unidentified auk and/or shearwater species on sea 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	3	18	6	30	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)						
Jul-21	3	17	6	35	0.05	0.58
Apr-22	1	6	1	17	0.02	1.00
May-22	6	34	6	74	0.09	0.41
Jun-22	1	6	1	17	0.02	1.00
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	2	12	2	29	0.02	0.71
Jul-21	6	36	12	61	0.06	0.41
Apr-22	2	12	2	29	0.02	0.71
May-22	6	35	6	76	0.06	0.41
Jun-22	1	6	1	17	0.01	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
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 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 North (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 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						
May-21	242	1,411	671	2,560	6.46	0.06
Jun-21	145	857	585	1,105	3.93	0.08
Jul-21	199	1,178	633	1,782	5.40	0.07
Aug-21	4	23	12	35	0.11	0.50
Sep-21	36	209	145	290	0.96	0.17
Oct-21	12	70	35	105	0.32	0.29
Nov-21	60	351	251	456	1.61	0.13
Dec-21	5	29	12	52	0.13	0.45
Jan-22	6	35	12	58	0.16	0.41
Feb-22	22	118	43	188	0.54	0.21
Mar-22	11	59	32	96	0.27	0.30
Apr-22	25	144	69	218	0.66	0.20
May-22	804	4,665	2,460	7,578	21.37	0.04
Jun-22	269	1,532	746	2,512	7.02	0.06
Jul-22	155	908	779	1,007	4.16	0.08

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Aug-22	5	29	6	58	0.13	0.45
Sep-22	53	304	161	453	1.39	0.14
Oct-22	1	6	1	17	0.03	1.00
Nov-22	1	6	1	18	0.03	1.00
Dec-22	14	81	41	151	0.37	0.27
Jan-23	26	150	58	243	0.69	0.20
Feb-23	23	133	86	179	0.61	0.21
Mar-23	118	692	486	891	3.17	0.09
Apr-23	16	90	39	164	0.41	0.25
Caledonia North (+2km)						
May-21	327	1,870	898	3,334	4.98	0.06
Jun-21	223	1,291	840	1,737	3.44	0.07
Jul-21	433	2,496	1,562	3,586	6.65	0.05
Aug-21	9	51	17	102	0.14	0.33
Sep-21	59	336	216	472	0.90	0.13
Oct-21	22	126	63	183	0.34	0.21
Nov-21	117	667	428	981	1.78	0.09
Dec-21	5	28	6	51	0.07	0.45
Jan-22	19	108	57	176	0.29	0.23
Feb-22	32	172	80	263	0.46	0.18
Mar-22	11	58	27	101	0.15	0.30
Apr-22	44	247	135	365	0.66	0.15
May-22	1,539	8,764	5,421	12,318	23.35	0.03
Jun-22	552	3,184	2,002	4,476	8.48	0.04
Jul-22	263	1,505	1,036	1,969	4.01	0.06

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Aug-22	20	114	40	200	0.30	0.22
Sep-22	73	424	244	633	1.13	0.12
Oct-22	3	18	3	35	0.05	0.58
Nov-22	2	12	2	29	0.03	0.71
Dec-22	25	147	82	212	0.39	0.20
Jan-23	41	241	129	358	0.64	0.16
Feb-23	39	222	148	302	0.59	0.16
Mar-23	214	1,241	933	1,588	3.31	0.07
Apr-23	40	229	143	326	0.61	0.16
Caledonia North (+4km)						
May-21	481	2,815	1,586	4,331	5.05	0.05
Jun-21	306	1,810	1,124	2,502	3.25	0.06
Jul-21	764	4,627	2,568	7,618	8.31	0.04
Aug-21	22	128	64	192	0.23	0.21
Sep-21	106	619	491	753	1.11	0.10
Oct-21	56	327	187	526	0.59	0.13
Nov-21	176	1,028	753	1,390	1.85	0.08
Dec-21	9	52	29	76	0.09	0.33
Jan-22	38	220	127	324	0.39	0.16
Feb-22	38	209	99	319	0.38	0.16
Mar-22	17	92	54	130	0.17	0.24
Apr-22	71	409	219	604	0.73	0.12
May-22	2,206	12,826	8,553	17,658	23.02	0.02
Jun-22	961	5,553	3,305	7,772	9.97	0.03
Jul-22	509	2,979	1,849	4,284	5.35	0.04

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Aug-22	28	160	69	269	0.29	0.19
Sep-22	100	582	309	856	1.04	0.10
Oct-22	7	41	12	70	0.07	0.38
Nov-22	3	18	3	35	0.03	0.58
Dec-22	44	259	136	383	0.46	0.15
Jan-23	56	330	171	501	0.59	0.13
Feb-23	58	335	202	456	0.60	0.13
Mar-23	293	1,721	1,210	2,232	3.09	0.06
Apr-23	77	441	258	647	0.79	0.11

Table 2-19: Apportioned density and population estimate of common guillemot on sea 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				
May-21	1,544	732	2,777	7.07
Jun-21	1,028	708	1,327	4.70
Jul-21	1,269	656	1,953	5.81
Aug-21	37	20	54	0.17
Sep-21	308	189	460	1.41
Oct-21	96	43	154	0.44
Nov-21	398	263	550	1.82
Dec-21	136	57	215	0.62
Jan-22	58	16	116	0.27
Feb-22	283	105	442	1.29
Mar-22	92	39	165	0.42
Apr-22	160	73	250	0.73
May-22	5,141	2,619	8,403	23.53
Jun-22	1,571	753	2,616	7.19
Jul-22	1,055	821	1,275	4.83
Aug-22	39	10	76	0.18
Sep-22	390	205	579	1.78
Oct-22	15	3	43	0.07
Nov-22	34	6	89	0.15
Dec-22	106	46	215	0.49
Jan-23	164	61	282	0.75
Feb-23	165	93	245	0.75
Mar-23	784	534	1030	3.59

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	114	44	212	0.52
Caledonia North (+2km)				
May-21	2,057	992	3,622	5.48
Jun-21	1,530	1,007	2,058	4.07
Jul-21	2,634	1,617	3,830	7.01
Aug-21	81	25	167	0.22
Sep-21	550	352	766	1.46
Oct-21	176	83	262	0.47
Nov-21	724	445	1,089	1.93
Dec-21	244	134	320	0.65
Jan-22	151	68	259	0.40
Feb-22	414	200	636	1.10
Mar-22	101	41	188	0.27
Apr-22	292	150	442	0.78
May-22	9,635	5,967	13,554	25.65
Jun-22	3,281	2,034	4,655	8.73
Jul-22	1,728	1,136	2,331	4.60
Aug-22	151	46	290	0.40
Sep-22	536	294	813	1.43
Oct-22	25	4	50	0.07
Nov-22	44	11	99	0.12
Dec-22	195	94	306	0.52
Jan-23	261	133	404	0.70
Feb-23	261	155	383	0.69
Mar-23	1,377	1,008	1,804	3.67
Apr-23	296	174	434	0.79

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	3,139	1,766	4,823	5.63
Jun-21	2,158	1,353	2,978	3.87
Jul-21	4,912	2,683	8,118	8.81
Aug-21	219	118	319	0.39
Sep-21	940	677	1,205	1.69
Oct-21	416	226	669	0.75
Nov-21	1,116	788	1,530	2.00
Dec-21	416	296	507	0.75
Jan-22	305	150	472	0.55
Feb-22	527	272	805	0.94
Mar-22	187	96	293	0.33
Apr-22	466	232	708	0.84
May-22	14,039	9,269	19,342	25.18
Jun-22	5,752	3,388	8,110	10.32
Jul-22	3,315	2,022	4,795	5.95
Aug-22	230	92	402	0.41
Sep-22	716	366	1066	1.28
Oct-22	53	15	95	0.10
Nov-22	52	14	90	0.09
Dec-22	333	167	511	0.60
Jan-23	354	175	556	0.64
Feb-23	389	218	561	0.70
Mar-23	1,889	1,300	2,501	3.39
Apr-23	526	295	782	0.94

Table 2-20: Availability bias-corrected density and population estimate of common guillemot on sea 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	2,024	960	3,640	9.26
Jun-21	1,347	929	1,740	6.17
Jul-21	1,663	859	2,560	7.61
Aug-21	48	26	71	0.22
Sep-21	404	248	604	1.85
Oct-21	126	56	202	0.58
Nov-21	522	345	721	2.39
Dec-21	178	74	281	0.81
Jan-22	76	21	152	0.35
Feb-22	371	138	579	1.70
Mar-22	121	52	217	0.55
Apr-22	210	96	328	0.96
May-22	6,740	3,433	11,017	30.85
Jun-22	2,059	987	3,429	9.42
Jul-22	1,383	1,076	1,671	6.33
Aug-22	51	13	100	0.24
Sep-22	511	269	759	2.34
Oct-22	20	3	56	0.09
Nov-22	44	7	116	0.20
Dec-22	139	60	282	0.64
Jan-23	215	80	369	0.99
Feb-23	216	122	322	0.99
Mar-23	1,028	700	1,350	4.71

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	149	58	278	0.68
Caledonia North (+2km)				
May-21	2,696	1,301	4,748	7.18
Jun-21	2,006	1,320	2,698	5.34
Jul-21	3,454	2,120	5,021	9.20
Aug-21	106	33	219	0.28
Sep-21	721	462	1,005	1.92
Oct-21	231	109	343	0.61
Nov-21	949	583	1,428	2.53
Dec-21	320	175	420	0.85
Jan-22	197	89	340	0.53
Feb-22	542	263	834	1.44
Mar-22	132	54	246	0.35
Apr-22	383	196	580	1.02
May-22	12,632	7,823	17,769	33.63
Jun-22	4,301	2,666	6,102	11.45
Jul-22	2,265	1,490	3,056	6.03
Aug-22	198	61	380	0.53
Sep-22	703	385	1,066	1.87
Oct-22	33	6	66	0.09
Nov-22	58	14	130	0.15
Dec-22	255	124	401	0.68
Jan-23	342	174	530	0.91
Feb-23	342	204	502	0.91
Mar-23	1,805	1,321	2,365	4.81
Apr-23	388	229	569	1.03

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	4,115	2,315	6,323	7.38
Jun-21	2,830	1,774	3,905	5.08
Jul-21	6,440	3,517	10,643	11.55
Aug-21	287	155	418	0.51
Sep-21	1,232	888	1,580	2.21
Oct-21	546	296	877	0.98
Nov-21	1,463	1,033	2,006	2.62
Dec-21	545	388	664	0.98
Jan-22	399	196	619	0.72
Feb-22	691	357	1,055	1.24
Mar-22	245	126	384	0.44
Apr-22	611	304	928	1.1
May-22	18,405	12,151	25,358	33.01
Jun-22	7,540	4,441	10,632	13.52
Jul-22	4,345	2,650	6,286	7.79
Aug-22	301	120	527	0.54
Sep-22	939	480	1,397	1.68
Oct-22	70	19	125	0.13
Nov-22	69	19	118	0.12
Dec-22	436	219	669	0.78
Jan-23	465	230	729	0.83
Feb-23	510	285	735	0.92
Mar-23	2,477	1,704	3,279	4.44
Apr-23	690	386	1,025	1.24

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 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 North (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 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						
May-21	30	175	64	292	0.80	0.18
Jun-21	10	59	12	118	0.27	0.32
Jul-21	28	166	89	255	0.76	0.19
Aug-21	22	127	41	232	0.58	0.21
Sep-21	12	70	29	110	0.32	0.29
Oct-21	1	6	1	18	0.03	1.00
Dec-21	2	12	2	35	0.05	0.71
Feb-22	16	86	32	151	0.39	0.25
Mar-22	3	16	3	37	0.07	0.58
Apr-22	34	195	46	379	0.89	0.17
May-22	131	760	377	1,364	3.48	0.09
Jun-22	8	46	11	91	0.21	0.35
Jul-22	30	176	94	258	0.81	0.18
Aug-22	8	46	12	87	0.21	0.35
Sep-22	170	975	396	1,618	4.47	0.08

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-22	1	6	1	17	0.03	1.00
Nov-22	2	12	2	24	0.05	0.71
Dec-22	2	12	2	29	0.05	0.71
Jan-23	6	35	6	69	0.16	0.41
Feb-23	2	12	2	29	0.05	0.71
Mar-23	16	94	29	170	0.43	0.25
Apr-23	3	17	6	28	0.08	0.58
Caledonia North (+2km)						
May-21	61	349	217	469	0.93	0.13
Jun-21	25	145	75	220	0.39	0.20
Jul-21	56	323	236	427	0.86	0.13
Aug-21	37	210	102	312	0.56	0.16
Sep-21	17	97	28	193	0.26	0.24
Oct-21	1	6	1	17	0.02	1.00
Dec-21	2	11	2	34	0.03	0.71
Jan-22	1	6	1	17	0.02	1.00
Feb-22	29	156	86	225	0.42	0.19
Mar-22	5	27	5	48	0.07	0.45
Apr-22	49	275	84	495	0.73	0.14
May-22	212	1,207	729	1,782	3.22	0.07
Jun-22	12	69	23	121	0.18	0.29
Jul-22	53	303	149	446	0.81	0.14
Aug-22	24	137	74	194	0.37	0.20
Sep-22	269	1,562	860	2,393	4.16	0.06
Oct-22	7	41	7	112	0.11	0.38

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Nov-22	5	29	6	52	0.08	0.45
Dec-22	6	35	12	65	0.09	0.41
Jan-23	7	41	12	82	0.11	0.38
Feb-23	7	40	11	74	0.11	0.38
Mar-23	24	139	52	226	0.37	0.20
Apr-23	7	40	11	80	0.11	0.38
Caledonia North (+4km)						
May-21	99	579	369	808	1.04	0.10
Jun-21	41	243	136	355	0.44	0.16
Jul-21	110	666	497	878	1.20	0.10
Aug-21	44	255	110	418	0.46	0.15
Sep-21	24	140	64	245	0.25	0.20
Oct-21	2	12	2	29	0.02	0.71
Dec-21	2	12	2	35	0.02	0.71
Jan-22	1	6	1	17	0.01	1.00
Feb-22	37	204	110	292	0.37	0.16
Mar-22	9	49	16	81	0.09	0.33
Apr-22	78	449	224	720	0.81	0.11
May-22	312	1,814	954	2,791	3.26	0.06
Jun-22	20	116	58	173	0.21	0.22
Jul-22	75	439	281	603	0.79	0.12
Aug-22	30	172	92	252	0.31	0.18
Sep-22	364	2,120	1,101	3,227	3.81	0.05
Oct-22	8	47	8	117	0.08	0.35
Nov-22	8	47	8	100	0.08	0.35

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	9	53	18	94	0.10	0.33
Jan-23	12	71	24	124	0.13	0.29
Feb-23	10	58	29	92	0.10	0.32
Mar-23	43	253	135	370	0.45	0.15
Apr-23	10	57	23	97	0.10	0.32

Table 2-22: Apportioned density and population estimate of razorbill on sea 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				
May-21	192	70	317	0.88
Jun-21	71	15	142	0.32
Jul-21	179	92	279	0.82
Aug-21	204	68	360	0.93
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	217	49	435	0.99
May-22	838	401	1,513	3.83
Jun-22	47	11	95	0.22
Jul-22	204	99	327	0.94
Aug-22	62	20	114	0.28
Sep-22	1,250	505	2,069	5.72
Oct-22	15	3	43	0.07
Nov-22	67	11	118	0.31
Dec-22	16	2	41	0.07
Jan-23	38	6	80	0.18
Feb-23	15	2	40	0.07
Mar-23	107	32	196	0.49
Apr-23	21	7	36	0.10

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+2km)				
May-21	384	240	509	1.02
Jun-21	172	90	261	0.46
Jul-21	341	244	456	0.91
Aug-21	334	153	511	0.89
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	325	93	600	0.87
May-22	1,327	802	1,961	3.53
Jun-22	71	23	126	0.19
Jul-22	348	163	528	0.93
Aug-22	182	86	281	0.48
Sep-22	1,974	1,035	3,074	5.26
Oct-22	58	10	161	0.15
Nov-22	107	32	178	0.28
Dec-22	46	14	94	0.12
Jan-23	44	12	93	0.12
Feb-23	47	12	94	0.12
Mar-23	154	56	257	0.41
Apr-23	52	13	106	0.14

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	646	411	900	1.16
Jun-21	290	164	423	0.52
Jul-21	707	519	936	1.27
Aug-21	436	204	693	0.78
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	512	237	844	0.92
May-22	1,986	1,034	3,057	3.56
Jun-22	120	59	181	0.22
Jul-22	488	307	675	0.88
Aug-22	247	122	377	0.44
Sep-22	2,609	1,304	4,017	4.68
Oct-22	61	10	159	0.11
Nov-22	137	38	257	0.25
Dec-22	68	22	125	0.12
Jan-23	76	25	138	0.14
Feb-23	67	31	113	0.12
Mar-23	278	145	415	0.50
Apr-23	68	26	117	0.12

Table 2-23: Availability bias-corrected density and population estimate of razorbill on sea 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	232	85	384	1.06
Jun-21	86	18	172	0.39
Jul-21	217	112	338	0.99
Aug-21	246	83	436	1.13
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	263	59	526	1.20
May-22	1,014	486	1,832	4.64
Jun-22	57	13	115	0.26
Jul-22	248	120	395	1.13
Aug-22	75	25	138	0.34
Sep-22	1,513	611	2,505	6.93
Oct-22	18	3	52	0.08
Nov-22	82	14	143	0.37
Dec-22	19	3	50	0.09
Jan-23	46	8	97	0.21
Feb-23	18	3	48	0.08
Mar-23	129	39	238	0.59
Apr-23	26	8	44	0.12

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+2km)				
May-21	465	290	617	1.24
Jun-21	208	109	316	0.55
Jul-21	413	296	552	1.10
Aug-21	404	185	619	1.08
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	394	113	726	1.05
May-22	1,607	972	2,375	4.28
Jun-22	86	28	152	0.23
Jul-22	421	198	639	1.12
Aug-22	220	104	340	0.59
Sep-22	2,391	1,254	3,723	6.37
Oct-22	70	12	195	0.19
Nov-22	129	39	215	0.34
Dec-22	56	17	114	0.15
Jan-23	54	15	112	0.14
Feb-23	57	14	114	0.15
Mar-23	187	68	311	0.50
Apr-23	63	16	129	0.17

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Caledonia North (+4km)				
May-21	782	497	1,090	1.40
Jun-21	351	198	512	0.63
Jul-21	856	629	1,133	1.54
Aug-21	528	246	840	0.95
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	620	287	1,022	1.11
May-22	2,405	1,252	3,702	4.31
Jun-22	146	72	219	0.26
Jul-22	592	372	817	1.06
Aug-22	299	148	456	0.54
Sep-22	3,159	1,579	4,864	5.67
Oct-22	74	12	193	0.13
Nov-22	165	46	311	0.30
Dec-22	82	27	152	0.15
Jan-23	92	30	167	0.17
Feb-23	82	38	137	0.15
Mar-23	336	176	502	0.60
Apr-23	82	32	142	0.15

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 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 North (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 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						
May-21	24	140	35	280	0.64	0.20
Jun-21	6	35	6	83	0.16	0.41
Jul-21	9	53	12	107	0.24	0.33
Aug-21	195	1,130	463	1,755	5.18	0.07
Sep-21	5	29	12	52	0.13	0.45
Oct-21	9	53	12	99	0.24	0.33
Apr-22	49	281	92	523	1.29	0.14
May-22	44	255	128	383	1.17	0.15
Jun-22	3	17	6	34	0.08	0.58
Jul-22	10	59	12	117	0.27	0.32
Aug-22	10	58	17	104	0.27	0.32
Sep-22	107	614	321	918	2.81	0.10
Jan-23	3	17	3	52	0.08	0.58
Feb-23	3	17	3	40	0.08	0.58
Mar-23	6	35	6	76	0.16	0.41
Apr-23	1	6	1	17	0.03	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North (+2km)						
May-21	41	235	92	383	0.63	0.16
Jun-21	19	110	23	237	0.29	0.23
Jul-21	24	138	40	236	0.37	0.20
Aug-21	345	1,957	840	3,143	5.21	0.05
Sep-21	7	40	11	85	0.11	0.38
Oct-21	13	74	13	149	0.20	0.28
Apr-22	77	433	152	753	1.15	0.11
May-22	80	456	268	649	1.22	0.11
Jun-22	4	23	6	40	0.06	0.50
Jul-22	10	57	11	120	0.15	0.32
Aug-22	22	126	69	194	0.34	0.21
Sep-22	193	1,121	743	1,528	2.99	0.07
Jan-23	3	18	3	53	0.05	0.58
Feb-23	4	23	6	46	0.06	0.50
Mar-23	7	41	7	87	0.11	0.38
Apr-23	2	11	2	23	0.03	0.71
Caledonia North (+4km)						
May-21	59	345	193	521	0.62	0.13
Jun-21	37	219	83	396	0.39	0.16
Jul-21	43	260	115	454	0.47	0.15
Aug-21	418	2,427	1,080	3,959	4.36	0.05
Sep-21	14	82	35	128	0.15	0.27
Oct-21	16	94	18	181	0.17	0.25
Apr-22	104	599	282	973	1.08	0.10

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
May-22	105	611	384	843	1.10	0.10
Jun-22	10	58	12	116	0.10	0.32
Jul-22	18	105	47	170	0.19	0.24
Aug-22	29	166	74	269	0.30	0.19
Sep-22	299	1,741	949	2,737	3.13	0.06
Oct-22	4	23	6	41	0.04	0.50
Jan-23	5	29	5	71	0.05	0.45
Feb-23	4	23	4	46	0.04	0.50
Mar-23	8	47	12	100	0.08	0.35
Apr-23	4	23	4	52	0.04	0.50

Table 2–25: Apportioned density and population estimate of puffin on sea 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				
May-21	141	35	284	0.65
Jun-21	35	6	85	0.16
Jul-21	55	12	114	0.25
Aug-21	1,156	467	1,811	5.29
Sep-21	30	12	54	0.14
Oct-21	60	13	117	0.28
Apr-22	289	93	544	1.32
May-22	258	129	389	1.18
Jun-22	17	6	34	0.08
Jul-22	60	12	120	0.27
Aug-22	61	17	111	0.28
Sep-22	644	327	978	2.95
Jan-23	18	3	54	0.08
Feb-23	18	3	43	0.08
Mar-23	36	6	80	0.16
Apr-23	6	1	17	0.03
Caledonia North (+2km)				
May-21	237	92	387	0.63
Jun-21	111	23	241	0.30
Jul-21	143	41	246	0.38
Aug-21	2,047	856	3,383	5.45
Sep-21	42	11	91	0.11
Oct-21	91	16	183	0.24

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-22	451	157	790	1.20
May-22	461	269	658	1.23
Jun-22	23	6	40	0.06
Jul-22	58	11	123	0.15
Aug-22	130	70	205	0.35
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	12	2	27	0.03
Caledonia North (+4km)				
May-21	348	193	528	0.62
Jun-21	221	83	402	0.40
Jul-21	267	117	466	0.48
Aug-21	2,532	1,098	4,231	4.54
Sep-21	86	36	137	0.15
Oct-21	107	20	205	0.19
Apr-22	623	287	1,022	1.12
May-22	616	386	853	1.11
Jun-22	58	12	117	0.10
Jul-22	106	47	172	0.19
Aug-22	170	75	281	0.30
Sep-22	1,812	975	2,861	3.25
Oct-22	27	7	49	0.05
Jan-23	29	5	73	0.05

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Feb-23	23	4	47	0.04
Mar-23	48	12	103	0.09
Apr-23	25	4	57	0.04

Table 2-26: Availability bias-corrected density and population estimate of puffin on sea 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	165	41	330	0.75
Jun-21	41	7	99	0.19
Jul-21	65	14	132	0.30
Aug-21	1,346	545	2,109	6.16
Sep-21	34	14	63	0.16
Oct-21	70	15	137	0.32
Apr-22	336	109	634	1.54
May-22	301	150	453	1.38
Jun-22	20	7	40	0.09
Jul-22	70	14	140	0.32
Aug-22	71	20	129	0.32
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	7	1	20	0.03
Caledonia North (+2km)				
May-21	276	107	450	0.73
Jun-21	129	27	281	0.34
Jul-21	166	47	287	0.44
Aug-21	2,385	997	3,942	6.35
Sep-21	49	13	107	0.13
Oct-21	105	18	213	0.28

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-22	526	183	920	1.40
May-22	537	314	767	1.43
Jun-22	27	7	47	0.07
Jul-22	68	13	144	0.18
Aug-22	151	81	239	0.40
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	14	2	31	0.04
Caledonia North (+4km)				
May-21	405	225	615	0.73
Jun-21	257	97	468	0.46
Jul-21	311	136	543	0.56
Aug-21	2,950	1,279	4,929	5.29
Sep-21	100	42	159	0.18
Oct-21	124	23	239	0.22
Apr-22	726	335	1,190	1.30
May-22	718	449	993	1.29
Jun-22	68	14	136	0.12
Jul-22	124	55	201	0.22
Aug-22	198	87	327	0.36
Sep-22	2,111	1,136	3,333	3.79
Oct-22	31	8	58	0.06
Jan-23	34	6	85	0.06

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Feb-23	27	5	55	0.05
Mar-23	56	14	120	0.10
Apr-23	29	5	67	0.05

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 2–27 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 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	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
Jun-22	1	6	1	17	0.03	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 2–28: Apportioned density and population estimate of black guillemot on sea 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	6	1	17	0.03
Caledonia North (+2km)				
Jun-22	6	1	17	0.03
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 No red-throated northern diver on sea were recorded at Caledonia North.

2.6.2 Great northern diver

2.6.2.1 No great northern diver on sea were recorded at Caledonia North.

2.7 Procellariidae

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 North.

Unidentified small shearwater species

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

Unidentified shearwater species

2.7.1.3 No unidentified shearwater species on sea 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 2–29.

Table 2-29: Density and population estimate of unidentified auk and/or shearwater species on sea in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Repeated from Table 2-17.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North						
Jul-21	3	18	6	30	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)						
Jul-21	3	17	6	35	0.05	0.58
Apr-22	1	6	1	17	0.02	1.00
May-22	6	34	6	74	0.09	0.41
Jun-22	1	6	1	17	0.02	1.00
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	2	12	2	29	0.02	0.71
Jul-21	6	36	12	61	0.06	0.41
Apr-22	2	12	2	29	0.02	0.71
May-22	6	35	6	76	0.06	0.41
Jun-22	1	6	1	17	0.01	1.00
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 2–30 and Table 2–31.

2.7.2.2 Table 2–30 includes the unapportioned density and population estimates of fulmar, and Table 2–31 includes the apportioned density and population estimates of fulmar.

Table 2–30: Unapportioned density and population estimate of fulmar on sea 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	6	35	17	52	0.16	0.41
Jun-21	13	77	18	136	0.35	0.28
Jul-21	27	160	89	231	0.73	0.19
Aug-21	8	46	12	98	0.21	0.35
Sep-21	17	98	41	168	0.45	0.24
Nov-21	3	18	3	41	0.08	0.58
Dec-21	2	12	2	35	0.05	0.71
Jan-22	3	17	3	52	0.08	0.58
Feb-22	5	27	11	48	0.12	0.45
Mar-22	1	5	1	16	0.02	1.00
May-22	4	23	6	35	0.11	0.50
Jun-22	9	51	23	80	0.23	0.33
Jul-22	73	427	146	814	1.96	0.12
Aug-22	3	17	3	40	0.08	0.58
Sep-22	6	34	6	69	0.16	0.41
Nov-22	7	41	7	100	0.19	0.38
Jan-23	1	6	1	17	0.03	1.00
Feb-23	1	6	1	17	0.03	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Mar-23	16	94	47	141	0.43	0.25
Apr-23	2	11	2	23	0.05	0.71
Caledonia North (+2km)						
May-21	11	63	29	97	0.17	0.30
Jun-21	16	93	29	168	0.25	0.25
Jul-21	50	288	167	427	0.77	0.14
Aug-21	9	51	11	108	0.14	0.33
Sep-21	20	114	57	182	0.30	0.22
Nov-21	16	91	16	245	0.24	0.25
Dec-21	3	17	3	40	0.05	0.58
Jan-22	4	23	4	68	0.06	0.50
Feb-22	7	38	16	64	0.10	0.38
Mar-22	1	5	1	16	0.01	1.00
Apr-22	2	11	2	28	0.03	0.71
May-22	7	40	17	63	0.11	0.38
Jun-22	31	179	46	381	0.48	0.18
Jul-22	118	675	315	1,099	1.80	0.09
Aug-22	5	29	5	69	0.08	0.45
Sep-22	9	52	12	110	0.14	0.33
Nov-22	9	52	9	110	0.14	0.33
Dec-22	2	12	2	24	0.03	0.71
Jan-23	1	6	1	18	0.02	1.00
Feb-23	3	17	3	34	0.05	0.58
Mar-23	20	116	52	197	0.31	0.22
Apr-23	6	34	6	80	0.09	0.41

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Caledonia North (+4km)						
May-21	16	94	35	170	0.17	0.25
Jun-21	25	148	95	213	0.27	0.20
Jul-21	95	575	436	715	1.03	0.10
Aug-21	13	75	17	151	0.13	0.28
Sep-21	37	216	123	356	0.39	0.16
Nov-21	19	111	19	274	0.20	0.23
Dec-21	5	29	6	64	0.05	0.45
Jan-22	6	35	6	81	0.06	0.41
Feb-22	17	94	44	149	0.17	0.24
Mar-22	3	16	3	32	0.03	0.58
Apr-22	3	17	3	35	0.03	0.58
May-22	11	64	23	122	0.11	0.30
Jun-22	49	283	116	520	0.51	0.14
Jul-22	164	960	615	1,375	1.72	0.08
Aug-22	9	52	17	92	0.09	0.33
Sep-22	11	64	17	122	0.11	0.30
Nov-22	12	71	12	142	0.13	0.29
Dec-22	4	24	4	47	0.04	0.50
Jan-23	3	18	3	35	0.03	0.58
Feb-23	3	17	3	35	0.03	0.58
Mar-23	32	188	82	317	0.34	0.18
Apr-23	13	74	29	126	0.13	0.28

Table 2–31: Apportioned density and population estimate of fulmar on sea 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	35	17	52	0.16
Jun-21	77	18	136	0.35
Jul-21	160	89	231	0.73
Aug-21	46	12	98	0.21
Sep-21	98	41	168	0.45
Nov-21	18	3	41	0.08
Dec-21	12	2	35	0.05
Jan-22	17	3	52	0.08
Feb-22	27	11	48	0.12
Mar-22	5	1	16	0.02
May-22	23	6	35	0.11
Jun-22	51	23	80	0.23
Jul-22	427	146	814	1.95
Aug-22	17	3	40	0.08
Sep-22	34	6	69	0.16
Nov-22	41	7	100	0.19
Jan-23	6	1	17	0.03
Feb-23	6	1	17	0.03
Mar-23	94	47	141	0.43
Apr-23	11	2	23	0.05
Caledonia North (+2km)				
May-21	63	29	97	0.17
Jun-21	93	29	168	0.25

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jul-21	288	167	427	0.77
Aug-21	51	11	108	0.14
Sep-21	114	57	182	0.30
Nov-21	91	16	245	0.24
Dec-21	17	3	40	0.05
Jan-22	23	4	68	0.06
Feb-22	38	16	64	0.10
Mar-22	5	1	16	0.01
Apr-22	11	2	28	0.03
May-22	40	17	63	0.11
Jun-22	179	46	381	0.48
Jul-22	675	315	1,099	1.80
Aug-22	29	5	69	0.08
Sep-22	52	12	110	0.14
Nov-22	52	9	110	0.14
Dec-22	12	2	24	0.03
Jan-23	6	1	18	0.02
Feb-23	17	3	34	0.05
Mar-23	116	52	197	0.31
Apr-23	34	6	80	0.09
Caledonia North (+4km)				
May-21	94	35	170	0.17
Jun-21	148	95	213	0.27
Jul-21	575	436	715	1.03
Aug-21	75	17	151	0.13

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Sep-21	216	123	356	0.39
Nov-21	111	19	274	0.20
Dec-21	29	6	64	0.05
Jan-22	35	6	81	0.06
Feb-22	94	44	149	0.17
Mar-22	16	3	32	0.03
Apr-22	17	3	35	0.03
May-22	64	23	122	0.11
Jun-22	283	116	520	0.51
Jul-22	960	615	1,375	1.72
Aug-22	52	17	92	0.09
Sep-22	64	17	122	0.11
Nov-22	71	12	142	0.13
Dec-22	24	4	47	0.04
Jan-23	18	3	35	0.03
Feb-23	17	3	35	0.03
Mar-23	188	82	317	0.34
Apr-23	74	29	126	0.13

2.7.3 Sooty shearwater

2.7.3.1 No sooty shearwater on sea 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 2–32 and Table 2–33.

2.7.4.2 Table 2–32 includes the unapportioned density and population estimates of Manx shearwater, and Table 2–33 includes the apportioned density and population estimates of Manx shearwater.

Table 2–32: Unapportioned density and population estimate of Manx shearwater on sea 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
Caledonia North (+2km)						
Jun-21	1	6	1	17	0.02	1.00
Caledonia North (+4km)						
Jun-21	1	6	1	18	0.01	1.00

Table 2–33: Apportioned density and population estimate of Manx shearwater on sea in Caledonia North; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance	Abundance Estimate		Density
		LCI	UCI	
Caledonia North				
Jun-21	6	1	18	0.03
Caledonia North (+2km)				
Jun-21	6	1	17	0.02
Caledonia North (+4km)				
Jun-21	6	1	18	0.01

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 2–34.

Table 2–34: Unapportioned density and population estimate of gannet on sea 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	31	183	65	337	0.84	0.18
Aug-21	3	17	3	41	0.08	0.58
Sep-21	11	64	11	145	0.29	0.30
Oct-21	15	88	29	146	0.40	0.26
Nov-21	2	12	2	29	0.05	0.71
Apr-22	1	6	1	17	0.03	1.00
May-22	1	6	1	17	0.03	1.00
Jun-22	9	51	28	80	0.23	0.33
Aug-22	1	6	1	17	0.03	1.00
Sep-22	1	6	1	17	0.03	1.00
Oct-22	2	12	2	23	0.05	0.71
Feb-23	1	6	1	17	0.03	1.00
Caledonia North (+2km)						
May-21	2	11	2	23	0.03	0.71
Jun-21	34	197	58	365	0.52	0.17
Jul-21	2	12	2	29	0.03	0.71
Aug-21	6	34	6	91	0.09	0.41
Sep-21	19	108	34	199	0.29	0.23

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Oct-21	30	171	91	251	0.46	0.18
Nov-21	2	11	2	29	0.03	0.71
Apr-22	1	6	1	17	0.02	1.00
May-22	4	23	6	46	0.06	0.50
Jun-22	19	110	58	167	0.29	0.23
Jul-22	4	23	6	40	0.06	0.50
Aug-22	1	6	1	17	0.02	1.00
Sep-22	6	35	6	64	0.09	0.41
Oct-22	2	12	2	29	0.03	0.71
Feb-23	3	17	3	40	0.05	0.58
Caledonia North (+4km)						
May-21	2	12	2	29	0.02	0.71
Jun-21	35	207	53	402	0.37	0.17
Jul-21	2	12	2	30	0.02	0.71
Aug-21	7	41	7	99	0.07	0.38
Sep-21	34	199	82	315	0.36	0.17
Oct-21	48	281	146	409	0.50	0.14
Nov-21	2	12	2	29	0.02	0.71
Apr-22	1	6	1	17	0.01	1.00
May-22	5	29	6	70	0.05	0.45
Jun-22	53	306	144	497	0.55	0.14
Jul-22	10	59	23	105	0.11	0.32
Aug-22	1	6	1	17	0.01	1.00
Sep-22	12	70	35	111	0.13	0.29
Oct-22	3	18	3	35	0.03	0.58
Feb-23	3	17	3	40	0.03	0.58

2.9 Turdidae

2.9.1 Unidentified thrush species

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

2.10 Passeriformes

2.10.1 Unidentified passerine species

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

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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