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

Appendix 6-1 Offshore Ornithology Baseline Characterisation Report Annex 2 Model-based and Design-based Density and Abundance Estimates of Birds in Flight (Caledonia OWF)

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# Volume 7B Appendix 6-1 Annex 2 Model-Based and Design-based Density and Abundance Estimates of Birds in Flight (Caledonia OWF)

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## Acronyms and Abbreviations

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



# 1 Introduction

- 1.1.1.1 This annex provides the design-based density and abundance estimates for birds in flight recorded in the Caledonia Offshore Wind Farm (OWF) (including the Caledonia North Site and Caledonia South Site) and relevant buffers (2km and 4km). The tables provide both the unapportioned, and apportioned estimates. Model-based density and abundance estimates for kittiwake *Rissa tridactyla* in flight recorded in the Caledonia OWF have also been provided. For the full justification see Volume 7B, Appendix 6-1: Offshore Ornithology Baseline Characterisation Report.
- 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/km<sup>2</sup>) and the Coefficient of Variation (CV) as a measure of precision.
- 1.1.1.3 As per the NatureScot guidance (NatureScot, 2023<sup>1</sup>), tables on species abundance and density have been ordered first by taxonomic species groupings, then by most abundant species within each grouping.

## 2 Species Accounts

### 2.1 Waterfowl

#### 2.1.1 Unidentified species

##### Unidentified wader species

2.1.1.1 The density and population estimates of unidentified wader species in the Caledonia OWF (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 wader species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
<i>None recorded</i>						
<b>Caledonia OWF (+2km)</b>						
<i>None recorded</i>						
<b>Caledonia OWF (+4km)</b>						
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 the Caledonia OWF (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 pink-footed geese in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jan-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Jan-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Jan-23	1	6	1	18	0.01	1.00

## 2.1.3 Mallard

2.1.3.1 The density and population estimates of mallard in the Caledonia OWF (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 mallard in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Feb-22	2	11	2	32	0.03	0.71
<b>Caledonia OWF (+2km)</b>						
Feb-22	2	11	2	32	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Feb-22	2	11	2	33	0.01	0.71

## 2.2 Laridae

### 2.2.1 Unidentified species

#### Unidentified black backed gull species

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

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

## Unidentified large gull species

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

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Nov-21	2	12	2	35	0.03	0.71
Nov-22	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Nov-21	2	11	2	34	0.02	0.71
Nov-22	1	6	1	23	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Nov-21	2	12	2	35	0.01	0.71
Nov-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 the Caledonia OWF (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 unidentified gull species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Dec-22	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
May-21	1	6	1	17	0.01	1.00
Dec-22	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
May-21	1	6	1	18	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 the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–7.

Table 2–7: Density and population estimate of flying unidentified fulmar and/or gull species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Nov-22	1	6	1	17	0.01	1.00
Mar-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Nov-22	2	12	2	29	0.01	0.71
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 the Caledonia OWF (plus the 2km buffer and plus the 4km buffer), calculated using model-based analysis for the breeding season (Mid-April to August) and design-based analysis for the non-breeding season (September to Mid-April) have been presented in Table 2–8. Table 2–9 presents design-based density and population estimates of kittiwake only.

2.2.2.2 Table 2–8 includes the unapportioned density and population estimates of kittiwake, and Table 2–9 includes the apportioned density and population estimates of kittiwakes.

Table 2–8: Unapportioned density and population estimate of kittiwake in flight in the Caledonia OWF; 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).

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	61	296	191	468	0.72	0.23
Jun-21	76	407	241	704	1.05	0.33
Jul-21	128	1,179	472	3,031	2.85	0.48
Aug-21	58	589	278	1,274	1.42	0.39
Sep-21	11	64	35	93	0.15	0.30
Oct-21	31	181	94	263	0.42	0.18
Nov-21	69	401	192	656	0.94	0.12
Dec-21	9	52	17	87	0.12	0.33
Jan-22	7	41	12	69	0.10	0.38
Feb-22	7	38	7	70	0.09	0.38
Mar-22	12	64	27	107	0.15	0.29
Apr-22	35	154	102	237	0.37	0.23
May-22	94	770	366	1,662	1.82	0.47
Jun-22	321	1,194	607	2,679	2.89	0.42
Jul-22	139	956	522	1,716	2.49	0.35
Aug-22	76	351	218	571	0.84	0.26



Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-22	19	110	46	203	0.26	0.23
Oct-22	6	35	12	58	0.08	0.41
Nov-22	6	35	6	76	0.08	0.41
Dec-22	2	12	2	35	0.03	0.71
Jan-23	2	12	2	29	0.03	0.71
Feb-23	9	52	9	115	0.12	0.33
Mar-23	1	6	1	18	0.01	1.00
Apr-23	80	231	73	792	0.56	0.69
<b>Caledonia OWF (+2km)</b>						
May-21	86	480	297	827	0.76	0.24
Jun-21	154	771	424	1,469	1.29	0.35
Jul-21	331	1,881	727	5,188	2.98	0.49
Aug-21	150	942	436	2,116	1.49	0.39
Sep-21	54	310	69	729	0.48	0.14
Oct-21	53	305	219	398	0.47	0.14
Nov-21	93	532	257	784	0.83	0.10
Dec-21	20	115	63	166	0.18	0.22
Jan-22	7	40	17	74	0.06	0.38
Feb-22	7	38	7	75	0.06	0.38
Mar-22	17	90	42	143	0.14	0.24
Apr-22	46	247	157	406	0.39	0.25
May-22	225	1,124	525	2,505	1.74	0.49
Jun-22	410	1,910	954	4,428	3.03	0.43
Jul-22	234	1,860	1,025	3,373	3.13	0.34
Aug-22	106	559	335	979	0.88	0.27

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-22	27	156	81	248	0.24	0.19
Oct-22	19	111	47	186	0.17	0.23
Nov-22	10	58	12	122	0.09	0.32
Dec-22	3	18	3	47	0.03	0.58
Jan-23	3	17	3	35	0.03	0.58
Feb-23	12	69	17	137	0.11	0.29
Mar-23	6	35	12	58	0.05	0.41
Apr-23	87	369	112	1,379	0.58	0.71
<b>Caledonia OWF (+4km)</b>						
May-21	117	683	417	1,195	0.79	0.25
Jun-21	215	1,253	660	2,460	1.48	0.35
Jul-21	452	2,653	1,026	7,329	3.06	0.49
Aug-21	233	1,329	611	2,998	1.53	0.39
Sep-21	68	398	129	860	0.45	0.12
Oct-21	75	439	299	591	0.50	0.12
Nov-21	134	780	437	1,153	0.88	0.09
Dec-21	25	146	82	204	0.17	0.20
Jan-22	8	46	17	81	0.05	0.35
Feb-22	10	55	16	99	0.06	0.32
Mar-22	35	189	103	281	0.21	0.17
Apr-22	60	348	220	572	0.40	0.25
May-22	250	1,500	693	3,385	1.73	0.49
Jun-22	481	2,693	1,339	6,234	3.10	0.44
Jul-22	540	3,093	1,709	5,635	3.69	0.33
Aug-22	135	788	469	1,380	0.91	0.28

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-22	36	210	117	309	0.24	0.17
Oct-22	26	153	71	247	0.17	0.20
Nov-22	12	71	18	136	0.08	0.29
Dec-22	7	41	7	88	0.05	0.38
Jan-23	5	29	6	59	0.03	0.45
Feb-23	19	110	46	185	0.12	0.23
Mar-23	9	53	23	82	0.06	0.33
Apr-23	91	520	157	1,940	0.60	0.71

Table 2-9: Apportioned density and population estimate of kittiwake in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
May-21	356	163	601	0.83
Jun-21	446	282	634	1.04
Jul-21	755	277	1,392	1.77
Aug-21	336	226	457	0.79
Sep-21	64	35	93	0.15
Oct-21	181	94	263	0.42
Nov-21	401	192	656	0.94
Dec-21	52	17	87	0.12
Jan-22	41	12	69	0.10
Feb-22	38	7	70	0.09
Mar-22	64	27	107	0.15
Apr-22	201	132	271	0.47
May-22	545	284	846	1.27
Jun-22	1,845	632	3,735	4.31
Jul-22	813	316	1,515	1.90
Aug-22	438	248	623	1.02
Sep-22	110	46	203	0.26
Oct-22	35	12	58	0.08
Nov-22	35	6	77	0.08
Dec-22	14	2	40	0.03
Jan-23	12	2	29	0.03
Feb-23	52	9	115	0.12
Mar-23	6	1	20	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Apr-23	453	80	1,151	1.06
<b>Caledonia OWF (+2km)</b>				
May-21	500	306	729	0.78
Jun-21	893	539	1,235	1.39
Jul-21	1,917	475	3,951	2.98
Aug-21	856	468	1,472	1.33
Sep-21	310	69	729	0.48
Oct-21	305	219	398	0.47
Nov-21	532	257	784	0.83
Dec-21	115	63	166	0.18
Jan-22	40	17	74	0.06
Feb-22	38	7	75	0.06
Mar-22	90	42	143	0.14
Apr-22	261	164	346	0.41
May-22	1,287	589	2,357	2.00
Jun-22	2,349	934	4,481	3.65
Jul-22	1,347	720	2,217	2.09
Aug-22	606	383	858	0.94
Sep-22	156	81	248	0.24
Oct-22	111	47	186	0.17
Nov-22	58	12	123	0.09
Dec-22	19	3	51	0.03
Jan-23	17	3	35	0.03
Feb-23	69	17	137	0.11
Mar-23	36	12	61	0.06
Apr-23	493	96	1,208	0.77

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF (+4km)</b>				
May-21	690	457	965	0.78
Jun-21	1,265	688	1,959	1.43
Jul-21	2,729	900	5,229	3.09
Aug-21	1,352	690	2,234	1.53
Sep-21	398	129	860	0.45
Oct-21	439	299	591	0.50
Nov-21	780	437	1,153	0.88
Dec-21	146	82	204	0.17
Jan-22	46	17	81	0.05
Feb-22	55	16	99	0.06
Mar-22	189	103	281	0.21
Apr-22	346	248	444	0.39
May-22	1,452	639	2,677	1.64
Jun-22	2,784	1,308	4,942	3.15
Jul-22	3,156	1,502	5,172	3.57
Aug-22	775	483	1,166	0.88
Sep-22	210	117	309	0.24
Oct-22	153	71	247	0.17
Nov-22	72	18	138	0.08
Dec-22	42	7	93	0.05
Jan-23	29	6	59	0.03
Feb-23	110	46	185	0.12
Mar-23	54	23	85	0.06
Apr-23	522	115	1,245	0.59

## 2.2.3 Great black-backed gull

2.2.3.1 The density and population estimates of great black-backed gull in the Caledonia OWF (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.

2.2.3.2 Table 2–10 includes the unapportioned density and population estimates of great black-backed gull, and Table 2–11 includes the apportioned density and population estimates of great black-backed gull.

Table 2–10: Unapportioned density and population estimate of great black-backed gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Sep-21	4	23	4	70	0.05	0.50
Nov-21	15	87	35	151	0.20	0.26
Dec-21	4	23	6	46	0.05	0.50
Jan-22	6	35	6	64	0.08	0.41
Feb-22	9	49	11	97	0.11	0.33
Sep-22	2	12	2	29	0.03	0.71
Oct-22	2	12	2	29	0.03	0.71
Nov-22	4	24	6	47	0.06	0.50
Dec-22	1	6	1	18	0.01	1.00
Jan-23	13	76	29	134	0.18	0.28
Feb-23	3	17	3	34	0.04	0.58
<b>Caledonia OWF (+2km)</b>						
Sep-21	5	29	5	86	0.05	0.45
Nov-21	18	103	40	177	0.16	0.24
Dec-21	6	34	11	57	0.05	0.41
Jan-22	13	74	40	114	0.11	0.28
Feb-22	15	80	32	139	0.12	0.26
Mar-22	1	5	1	16	0.01	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-22	4	23	6	40	0.04	0.50
Oct-22	5	29	6	58	0.05	0.45
Nov-22	11	64	41	93	0.10	0.30
Dec-22	7	41	12	70	0.06	0.38
Jan-23	13	76	23	134	0.12	0.28
Feb-23	5	29	11	46	0.05	0.45
Mar-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Sep-21	8	47	8	105	0.05	0.35
Nov-21	25	146	70	233	0.17	0.20
Dec-21	9	52	23	82	0.06	0.33
Jan-22	15	87	52	127	0.10	0.26
Feb-22	17	93	33	159	0.11	0.24
Mar-22	2	11	2	27	0.01	0.71
Sep-22	4	23	6	47	0.03	0.50
Oct-22	6	35	12	65	0.04	0.41
Nov-22	13	77	41	112	0.09	0.28
Dec-22	14	83	41	124	0.09	0.27
Jan-23	15	88	41	147	0.10	0.26
Feb-23	6	35	17	58	0.04	0.41
Mar-23	1	6	1	18	0.01	1.00



Table 2-11: Apportioned density and population estimate of great black-backed gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Sep-21	23	4	70	0.05
Nov-21	98	37	182	0.23
Dec-21	23	6	46	0.05
Jan-22	35	6	64	0.08
Feb-22	49	11	97	0.11
Sep-22	12	2	29	0.03
Oct-22	12	2	29	0.03
Nov-22	28	7	60	0.07
Dec-22	7	1	21	0.02
Jan-23	76	29	134	0.18
Feb-23	17	3	34	0.04
<b>Caledonia OWF (+2km)</b>				
Sep-21	29	5	86	0.05
Nov-21	119	43	223	0.18
Dec-21	34	11	57	0.05
Jan-22	74	40	114	0.11
Feb-22	80	32	139	0.12
Mar-22	5	1	16	0.01
Sep-22	23	6	40	0.04
Oct-22	29	6	58	0.05
Nov-22	69	42	112	0.11
Dec-22	44	13	76	0.07
Jan-23	76	23	134	0.12

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Feb-23	29	11	46	0.05
Mar-23	6	1	18	0.01
<b>Caledonia OWF (+4km)</b>				
Sep-21	47	8	105	0.05
Nov-21	163	73	281	0.18
Dec-21	52	23	82	0.06
Jan-22	87	52	127	0.10
Feb-22	93	33	159	0.11
Mar-22	11	2	27	0.01
Sep-22	23	6	47	0.03
Oct-22	35	12	65	0.04
Nov-22	83	42	128	0.09
Dec-22	86	42	131	0.10
Jan-23	88	41	147	0.10
Feb-23	35	17	58	0.04
Mar-23	6	1	19	0.01

## 2.2.4 Herring gull

2.2.4.1 The density and population estimates of herring gull in the Caledonia OWF (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.

2.2.4.2 Table 2–12 includes the unapportioned density and population estimates of herring gull, and Table 2–13 includes the apportioned density and population estimates of herring gull.

Table 2–12: Unapportioned density and population estimate of herring gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Sep-21	1	6	1	17	0.01	1.00
Oct-21	1	6	1	18	0.01	1.00
Nov-21	1	6	1	17	0.01	1.00
Dec-21	2	12	2	29	0.03	0.71
Jan-22	1	6	1	17	0.01	1.00
Feb-22	1	5	1	16	0.01	1.00
Nov-22	2	12	2	24	0.03	0.71
Dec-22	3	18	3	41	0.04	0.58
Feb-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Sep-21	1	6	1	17	0.01	1.00
Oct-21	1	6	1	17	0.01	1.00
Nov-21	2	11	2	29	0.02	0.71
Dec-21	3	17	3	40	0.03	0.58
Jan-22	1	6	1	17	0.01	1.00
Feb-22	1	5	1	16	0.01	1.00
Nov-22	2	12	2	29	0.02	0.71
Dec-22	4	23	4	64	0.04	0.50

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	2	11	2	29	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Sep-21	1	6	1	18	0.01	1.00
Oct-21	1	6	1	18	0.01	1.00
Nov-21	2	12	2	29	0.01	0.71
Dec-21	3	17	3	47	0.02	0.58
Jan-22	1	6	1	17	0.01	1.00
Feb-22	1	5	1	16	0.01	1.00
Jun-22	1	6	1	17	0.01	1.00
Jul-22	20	117	20	257	0.13	0.22
Oct-22	1	6	1	18	0.01	1.00
Nov-22	2	12	2	29	0.01	0.71
Dec-22	6	35	6	71	0.04	0.41
Feb-23	2	12	2	29	0.01	0.71

Table 2-13: Apportioned density and population estimate of herring gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Sep-21	6	1	17	0.01
Oct-21	6	1	18	0.01
Nov-21	7	1	21	0.02
Dec-21	12	2	29	0.03
Jan-22	6	1	17	0.01
Feb-22	5	1	16	0.01
Nov-22	14	2	30	0.03
Dec-22	20	3	47	0.05
Feb-23	6	1	17	0.01
<b>Caledonia OWF (+2km)</b>				
Sep-21	6	1	17	0.01
Oct-21	6	1	17	0.01
Nov-21	12	2	34	0.02
Dec-21	17	3	40	0.03
Jan-22	6	1	17	0.01
Feb-22	5	1	16	0.01
Nov-22	13	2	35	0.02
Dec-22	24	4	69	0.04
Feb-23	11	2	29	0.02
<b>Caledonia OWF (+4km)</b>				
Sep-21	6	1	18	0.01
Oct-21	6	1	18	0.01
Nov-21	13	2	33	0.01

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Dec-21	17	3	47	0.02
Jan-22	6	1	17	0.01
Feb-22	5	1	16	0.01
Jun-22	6	1	17	0.01
Jul-22	117	20	257	0.13
Oct-22	6	1	18	0.01
Nov-22	13	2	33	0.01
Dec-22	36	6	75	0.04
Feb-23	12	2	29	0.01

## 2.2.5 Common gull

2.2.5.1 The density and population estimates of common gull in the Caledonia OWF (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.

2.2.5.2 Table 2–14 includes the unapportioned density and population estimates of common gull, and Table 2–15 includes the apportioned density and population estimates of herring gull.

Table 2–14: Unapportioned density and population estimate of common gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Aug-22	2	12	2	35	0.03	0.71
Dec-22	2	12	2	29	0.03	0.71
<b>Caledonia OWF (+2km)</b>						
Sep-21	8	46	8	115	0.07	0.35
Aug-22	2	11	2	34	0.02	0.71
Dec-22	2	12	2	29	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Sep-21	8	47	8	129	0.05	0.35
Nov-21	1	6	1	17	0.01	1.00
Aug-22	2	11	2	34	0.01	0.71
Dec-22	2	12	2	29	0.01	0.71

Table 2-15: Apportioned density and population estimate of common gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Aug-22	12	2	35	0.03
Dec-22	14	2	33	0.03
<b>Caledonia OWF (+2km)</b>				
Sep-21	46	8	115	0.07
Aug-22	11	2	34	-
Dec-22	13	2	31	-
<b>Caledonia OWF (+4km)</b>				
Sep-21	47	8	129	0.05
Nov-21	6	1	17	0.01
Aug-22	11	2	34	0.01
Dec-22	12	2	29	0.01



## 2.2.6 Lesser black-backed gull

2.2.6.1 The density and population estimates of lesser black-backed gull in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–16 and Table 2–17.

2.2.6.2 Table 2–16 includes the unapportioned density and population estimates of lesser black-backed gull, and Table 2–17 includes the apportioned density and population estimates of lesser black-backed gull.

Table 2–16: Unapportioned density and population estimate of lesser black-backed gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jun-22	2	11	2	34	0.03	0.71
<b>Caledonia OWF (+2km)</b>						
Jun-22	2	11	2	34	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
May-22	1	6	1	17	0.01	1.00
Jun-22	2	12	2	35	0.01	0.71
Jul-22	2	12	2	35	0.01	0.71

Table 2-17: Apportioned density and population estimate of lesser black-backed gull in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Jun-22	11	2	34	0.03
<b>Caledonia OWF (+2km)</b>				
Jun-22	11	2	34	0.02
<b>Caledonia OWF (+4km)</b>				
May-22	6	1	17	0.01
Jun-22	12	2	35	0.01
Jul-22	12	2	35	0.01

## 2.3 Sterninae

### 2.3.1 Unidentified species

#### Commic tern

2.3.1.1 The density and population estimates of commic tern in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–18.

Table 2–18: Density and population estimate of unidentified commic tern species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Aug-21	2	12	2	35	0.03	0.71
May-22	2	12	2	35	0.03	0.71
Aug-22	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
May-21	3	17	3	52	0.03	0.58
Aug-21	2	11	2	34	0.02	0.71
May-22	2	11	2	34	0.02	0.71
Aug-22	5	29	5	69	0.05	0.45
<b>Caledonia OWF (+4km)</b>						
May-21	3	18	3	53	0.02	0.58
Aug-21	2	12	2	35	0.01	0.71
May-22	2	12	2	35	0.01	0.71
Aug-22	8	46	11	92	0.05	0.35

## Unidentified tern species

2.3.1.2 The density and population estimates of unidentified tern species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–19.

Table 2–19: Density and population estimate of unidentified tern species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
<i>None recorded</i>						
<b>Caledonia OWF (+2km)</b>						
May-21	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Aug-21	1	6	1	18	0.01	1.00

## 2.3.2 Common tern

2.3.2.1 The density and population estimates of common tern in the Caledonia OWF (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.

2.3.2.2 Table 2–20 includes the unapportioned density and population estimates of common tern, and Table 2–21 includes the apportioned density and population estimates of common tern.

Table 2–20: Unapportioned density and population estimate of common tern in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Aug-21	3	17	3	52	0.04	0.58
<b>Caledonia OWF (+2km)</b>						
Aug-21	3	17	3	51	0.03	0.58
<b>Caledonia OWF (+4km)</b>						
Aug-21	3	17	3	52	0.02	0.58

Table 2–21: Apportioned density and population estimate of common tern in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Aug-21	29	5	87	0.07
Aug-22	6	1	17	0.01
<b>Caledonia OWF (+2km)</b>				
Aug-21	28	5	85	0.04
<b>Caledonia OWF (+4km)</b>				
Aug-21	29	5	87	0.03

### 2.3.3 Arctic tern

- 2.3.3.1 The density and population estimates of Arctic tern in the Caledonia OWF (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.
- 2.3.3.2 Table 2–22 includes the unapportioned density and population estimates of Arctic tern, and Table 2–23 includes the apportioned density and population estimates of Arctic tern.

Table 2–22: Unapportioned density and population estimate of Arctic tern in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
<i>None recorded</i>						
<b>Caledonia OWF (+2km)</b>						
May-21	7	40	7	103	0.06	0.38
Aug-22	5	29	5	69	0.05	0.45
<b>Caledonia OWF (+4km)</b>						
May-21	9	53	12	117	0.06	0.33
Aug-22	6	34	6	75	0.04	0.41

Table 2–23: Apportioned density and population estimate of Arctic tern in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
May-22	12	2	35	0.03
<b>Caledonia OWF (+2km)</b>				
May-21	69	11	172	0.11
May-22	11	2	34	0.02
Aug-22	58	10	138	0.09
<b>Caledonia OWF (+4km)</b>				
May-21	77	16	188	0.09
May-22	12	2	35	0.01
Aug-22	80	17	167	0.09

## 2.4 Stercorariidae

### 2.4.1 Great skua

2.4.1.1 The density and population estimates of great skua in the Caledonia OWF (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.

2.4.1.2 Table 2–24 includes the unapportioned density and population estimates of great skua, and Table 2–25 includes the apportioned density and population estimates of great skua.

Table 2-24: Unapportioned density and population estimate of great skua in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	1	6	1	18	0.01	1.00
Jul-21	1	6	1	18	0.01	1.00
Aug-21	4	23	4	58	0.05	0.50
Jul-22	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	1	6	1	17	0.01	0.71
Jul-21	2	12	2	29	0.02	0.71
Aug-21	5	29	5	68	0.05	0.45
Jul-22	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
May-21	1	6	1	18	0.01	1.00
Jun-21	1	6	1	18	0.01	1.00
Jul-21	4	24	6	48	0.03	0.50
Aug-21	6	35	6	75	0.04	0.41
Sep-21	1	6	1	18	0.01	1.00
Jul-22	1	6	1	18	0.01	1.00

Table 2-25: Apportioned density and population estimate of great skua in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
May-21	6	1	17	0.01
Jun-21	6	1	18	0.01
Jul-21	6	1	18	0.01
Aug-21	23	4	58	0.05
Jul-22	6	1	18	0.01
<b>Caledonia OWF (+2km)</b>				
May-21	6	1	17	0.01
Jun-21	6	1	17	0.01
Jul-21	12	2	29	0.02
Aug-21	29	5	68	0.05
Jul-22	6	1	17	0.01
<b>Caledonia OWF (+4km)</b>				
May-21	6	1	18	0.01
Jun-21	6	1	18	0.01
Jul-21	24	6	48	0.03
Aug-21	35	6	75	0.04
Sep-21	6	1	18	0.01
Jul-22	6	1	18	0.01



## 2.4.3 Arctic skua

2.4.3.1 The density and population estimates of Arctic skua in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–26 and Table 2–27.

2.4.3.2 Table 2–26 includes the unapportioned density and population estimates of Arctic skua, and Table 2–27 includes the apportioned density and population estimates of Arctic skua.

Table 2–26: Unapportioned density and population estimate of Arctic skua in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Aug-22	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Aug-22	2	11	2	29	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Aug-22	2	11	2	29	0.01	0.71

Table 2–27: Apportioned density and population estimate of Arctic skua in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance	Abundance Estimate		Density
		LCI	UCI	
<b>Caledonia OWF</b>				
Aug-22	6	1	17	0.01
<b>Caledonia OWF (+2km)</b>				
Aug-22	11	2	29	0.02
<b>Caledonia OWF (+4km)</b>				
Aug-22	11	2	29	0.01

## 2.6 Alcidae

### 2.6.1 Unidentified species

#### Unidentified guillemot and/or razorbill

2.6.1.1 The density and population estimates of unidentified guillemot and/or razorbill species in the Caledonia OWF (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 unidentified guillemot and/or razorbill in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	16	94	18	194	0.22	0.25
Sep-21	2	12	2	35	0.03	0.71
Oct-21	12	70	12	164	0.16	0.29
Nov-21	4	23	4	58	0.05	0.50
Jan-22	4	23	4	69	0.05	0.50
Mar-22	5	27	5	48	0.06	0.45
Apr-22	2	12	2	29	0.03	0.71
Jun-22	1	6	1	17	0.01	1.00
Jul-22	1	6	1	18	0.01	1.00
Sep-22	2	12	2	29	0.03	0.71
Oct-22	27	158	27	461	0.37	0.19
Jan-23	1	6	1	17	0.01	1.00
Feb-23	11	63	11	144	0.15	0.30
<b>Caledonia OWF (+2km)</b>						
May-21	5	29	5	75	0.05	0.45
Jun-21	23	133	52	226	0.21	0.21

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Sep-21	3	17	3	52	0.03	0.58
Oct-21	16	92	16	208	0.14	0.25
Nov-21	4	23	4	63	0.04	0.50
Jan-22	4	23	4	69	0.04	0.50
Feb-22	1	5	1	16	0.01	1.00
Mar-22	5	27	5	53	0.04	0.45
Apr-22	2	11	2	28	0.02	0.71
Jun-22	1	6	1	17	0.01	1.00
Jul-22	4	23	6	40	0.04	0.50
Sep-22	3	17	3	35	0.03	0.58
Oct-22	59	344	59	781	0.53	0.13
Jan-23	1	6	1	17	0.01	1.00
Feb-23	12	69	12	160	0.11	0.29
Mar-23	3	17	3	46	0.03	0.58
<b>Caledonia OWF (+4km)</b>						
May-21	6	35	6	94	0.04	0.41
Jun-21	47	277	88	530	0.31	0.15
Sep-21	6	35	6	88	0.04	0.41
Oct-21	25	146	25	322	0.17	0.20
Nov-21	5	29	5	70	0.03	0.45
Dec-21	8	47	8	140	0.05	0.35
Jan-22	6	35	6	93	0.04	0.41
Feb-22	1	5	1	16	0.01	1.00
Mar-22	5	27	5	54	0.03	0.45
Apr-22	2	12	2	29	0.01	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jun-22	1	6	1	17	0.01	1.00
Jul-22	5	29	12	47	0.03	0.45
Sep-22	4	23	6	41	0.03	0.50
Oct-22	78	459	78	935	0.52	0.11
Nov-22	2	12	2	29	0.01	0.71
Jan-23	1	6	1	18	0.01	1.00
Feb-23	15	87	15	203	0.10	0.26
Mar-23	4	23	4	53	0.03	0.50
Apr-23	1	6	1	17	0.01	1.00

## Unidentified auk species

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

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jul-21	1	6	1	18	0.01	1.00
Jan-22	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Jul-21	1	6	1	17	0.01	1.00
Jan-22	1	6	1	17	0.01	1.00
Aug-22	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Jul-21	1	6	1	18	0.01	1.00
Jan-22	1	6	1	17	0.01	1.00
Apr-22	1	6	1	17	0.01	1.00
Aug-22	1	6	1	17	0.01	1.00

## Unidentified auk and/or shearwater species

2.6.1.3 The density and population estimates of unidentified auk and/or shearwater species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–30.

Table 2–30: Density and population estimate of unidentified auk and/or shearwater species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jul-21	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	1	6	1	17	0.01	1.00
Jul-21	1	6	1	17	0.01	1.00
Jun-22	2	11	2	34	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
May-21	4	23	4	53	0.03	0.50
Jun-21	1	6	1	18	0.01	1.00
Jul-21	1	6	1	18	0.01	1.00
Jun-22	3	17	3	46	0.02	0.58

## 2.6.2 Common guillemot

2.6.2.1 The density and population estimates of common guillemot in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–31 and Table 2–32.

2.6.2.2 Table 2–31 includes the unapportioned density and population estimates of common guillemot, and Table 2–32 includes the apportioned density and population estimates of common guillemot.

Table 2–31: Unapportioned density and population estimate of common guillemot in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	53	309	76	618	0.72	0.14
Jun-21	75	440	247	646	1.03	0.12
Jul-21	160	944	431	1,516	2.21	0.08
Aug-21	10	58	23	98	0.14	0.32
Sep-21	2	12	2	23	0.03	0.71
Oct-21	5	29	5	76	0.07	0.45
Nov-21	8	46	12	93	0.11	0.35
Jan-22	1	6	1	17	0.01	1.00
Feb-22	2	11	2	27	0.03	0.71
Mar-22	57	305	112	530	0.71	0.13
Apr-22	87	501	167	892	1.17	0.11
May-22	53	307	145	487	0.72	0.14
Jun-22	83	477	184	885	1.12	0.11
Jul-22	145	848	515	1,316	1.98	0.08
Aug-22	1	6	1	17	0.01	1.00
Sep-22	5	29	6	52	0.07	0.45
Oct-22	6	35	6	70	0.08	0.41
Jan-23	6	35	12	64	0.08	0.41

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	155	890	396	1,470	2.08	0.08
Mar-23	25	146	47	263	0.34	0.20
Apr-23	71	402	130	827	0.94	0.12
<b>Caledonia OWF (+2km)</b>						
May-21	81	465	167	879	0.72	0.11
Jun-21	144	835	597	1,067	1.30	0.08
Jul-21	245	1,419	736	2,080	2.20	0.06
Aug-21	13	74	29	120	0.11	0.28
Sep-21	7	40	7	103	0.06	0.38
Oct-21	17	98	35	167	0.15	0.24
Nov-21	14	80	29	137	0.12	0.27
Jan-22	2	11	2	34	0.02	0.71
Feb-22	7	38	7	96	0.06	0.38
Mar-22	59	313	117	541	0.49	0.13
Apr-22	155	879	516	1,282	1.37	0.08
May-22	63	360	160	578	0.56	0.13
Jun-22	131	751	315	1,295	1.17	0.09
Jul-22	216	1,244	800	1,739	1.93	0.07
Aug-22	1	6	1	17	0.01	1.00
Sep-22	5	29	6	58	0.05	0.45
Oct-22	22	128	22	326	0.20	0.21
Nov-22	1	6	1	17	0.01	1.00
Jan-23	18	105	29	209	0.16	0.24
Feb-23	197	1,125	600	1,731	1.75	0.07
Mar-23	32	185	58	318	0.29	0.18



Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Apr-23	87	493	204	890	0.77	0.11
<b>Caledonia OWF (+4km)</b>						
May-21	114	666	298	1,192	0.75	0.09
Jun-21	250	1,471	906	2,259	1.66	0.06
Jul-21	281	1,697	839	2,620	1.92	0.06
Aug-21	20	116	58	174	0.13	0.22
Sep-21	8	47	8	105	0.05	0.35
Oct-21	17	100	35	170	0.11	0.24
Nov-21	16	93	35	151	0.11	0.25
Jan-22	3	17	3	46	0.02	0.58
Feb-22	11	60	16	121	0.07	0.30
Mar-22	76	411	167	664	0.47	0.11
Apr-22	296	1,707	951	2,514	1.93	0.06
May-22	87	505	267	749	0.57	0.11
Jun-22	205	1,186	515	2,002	1.34	0.07
Jul-22	285	1,666	1,093	2,314	1.89	0.06
Aug-22	1	6	1	17	0.01	1.00
Sep-22	5	29	6	58	0.03	0.45
Oct-22	22	129	22	323	0.15	0.21
Nov-22	2	12	2	29	0.01	0.71
Jan-23	21	123	47	229	0.14	0.22
Feb-23	247	1,430	782	2,212	1.62	0.06
Mar-23	37	217	100	352	0.25	0.16
Apr-23	116	666	362	1,108	0.75	0.09

Table 2-32: Apportioned density and population estimate of common guillemot in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
May-21	315	77	635	0.74
Jun-21	535	266	843	1.25
Jul-21	950	432	1,533	2.22
Aug-21	58	23	98	0.14
Sep-21	20	3	43	0.05
Oct-21	99	17	240	0.23
Nov-21	69	16	151	0.16
Jan-22	35	6	103	0.08
Feb-22	11	2	27	0.03
Mar-22	332	117	577	0.78
Apr-22	513	169	920	1.20
May-22	307	145	487	0.72
Jun-22	483	185	902	1.13
Jul-22	854	516	1,334	2.00
Aug-22	6	1	17	0.01
Sep-22	37	8	71	0.09
Oct-22	193	33	531	0.45
Jan-23	41	13	81	0.10
Feb-23	951	407	1,607	2.22
Mar-23	146	47	263	0.34
Apr-23	402	130	827	0.94
<b>Caledonia OWF (+2km)</b>				
May-21	500	173	971	0.78

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Jun-21	968	649	1,292	1.50
Jul-21	1,431	738	2,113	2.22
Aug-21	74	29	120	0.11
Sep-21	55	10	148	0.09
Oct-21	190	51	375	0.30
Nov-21	103	33	200	0.16
Jan-22	40	7	120	0.06
Feb-22	43	8	112	0.07
Mar-22	340	122	592	0.53
Apr-22	890	518	1,309	1.38
May-22	360	160	578	0.56
Jun-22	768	318	1,346	1.19
Jul-22	1,267	806	1,778	1.97
Aug-22	12	2	34	0.02
Sep-22	34	7	68	0.05
Oct-22	472	81	1,107	0.73
Nov-22	6	1	17	0.01
Jan-23	111	30	226	0.17
Feb-23	1,192	612	1,884	1.85
Mar-23	199	61	353	0.31
Apr-23	493	204	890	0.77
<b>Caledonia OWF (+4km)</b>				
May-21	724	308	1,339	0.82
Jun-21	1,743	994	2,778	1.97
Jul-21	1,709	841	2,655	1.93

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
Aug-21	116	58	174	0.13
Sep-21	78	13	180	0.09
Oct-21	246	60	492	0.28
Nov-21	122	40	221	0.14
Dec-21	47	8	140	0.05
Jan-22	58	10	156	0.07
Feb-22	65	17	137	0.07
Mar-22	438	172	717	0.49
Apr-22	1,724	954	2,558	1.95
May-22	505	267	749	0.57
Jun-22	1,209	519	2,064	1.37
Jul-22	1,695	1,105	2,360	1.92
Aug-22	12	2	34	0.01
Sep-22	36	8	70	0.04
Oct-22	588	100	1,258	0.66
Nov-22	20	3	47	0.02
Jan-23	129	48	247	0.15
Feb-23	1,515	797	2,408	1.71
Mar-23	234	103	390	0.27
Apr-23	672	363	1,123	0.76

## 2.6.3 Razorbill

2.6.3.1 The density and population estimates of razorbill in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–33 and Table 2–34.

2.6.3.2 Table 2–33 includes the unapportioned density and population estimates of razorbill, and Table 2–34 includes the apportioned density and population estimates of razorbill.

Table 2–33: Unapportioned density and population estimate of razorbill in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jun-21	4	23	6	47	0.05	0.50
Sep-21	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	2	12	2	35	0.03	0.71
May-22	3	17	3	52	0.04	0.58
Sep-22	2	12	2	29	0.03	0.71
Nov-22	1	6	1	18	0.01	1.00
Feb-23	6	34	6	75	0.08	0.41
Mar-23	5	29	5	58	0.07	0.45
Apr-23	5	28	5	74	0.07	0.45
<b>Caledonia OWF (+2km)</b>						
Jun-21	6	35	6	81	0.05	0.41
Aug-21	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	6	34	6	68	0.05	0.41
May-22	3	17	3	51	0.03	0.58
Jul-22	2	12	2	29	0.02	0.71
Sep-22	11	63	12	144	0.10	0.30

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Nov-22	1	6	1	17	0.01	1.00
Feb-23	7	40	7	80	0.06	0.38
Mar-23	8	46	8	104	0.07	0.35
Apr-23	5	28	5	79	0.04	0.45
<b>Caledonia OWF (+4km)</b>						
Jun-21	10	59	10	124	0.07	0.32
Jul-21	2	12	2	36	0.01	0.71
Sep-21	1	6	1	18	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	9	52	9	121	0.06	0.33
May-22	3	17	3	52	0.02	0.58
Jun-22	2	12	2	35	0.01	0.71
Jul-22	4	23	6	41	0.03	0.50
Sep-22	11	64	11	146	0.07	0.30
Nov-22	1	6	1	18	0.01	1.00
Feb-23	7	41	7	81	0.05	0.38
Mar-23	12	70	18	135	0.08	0.29
Apr-23	10	57	10	126	0.06	0.32

Table 2-34: Apportioned density and population estimate of razorbill in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Jun-21	28	6	61	0.07
Sep-21	10	2	32	0.02
Mar-22	5	1	17	0.01
Apr-22	12	2	36	0.03
May-22	17	3	52	0.04
Sep-22	16	3	39	0.04
Nov-22	6	1	18	0.01
Feb-23	36	6	82	0.08
Mar-23	29	5	58	0.07
Apr-23	28	5	74	0.07
<b>Caledonia OWF (+2km)</b>				
Jun-21	41	7	98	0.06
Aug-21	8	1	24	0.01
Mar-22	5	1	18	0.01
Apr-22	34	6	69	0.05
May-22	17	3	51	0.03
Jul-22	12	2	30	0.02
Sep-22	75	14	169	0.12
Nov-22	6	1	17	0.01
Feb-23	42	7	87	0.07
Mar-23	49	8	115	0.08
Apr-23	28	5	79	0.04

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF (+4km)</b>				
Jun-21	70	11	152	0.08
Jul-21	12	2	36	0.01
Sep-21	10	2	31	0.01
Mar-22	5	1	17	0.01
Apr-22	53	9	123	0.06
May-22	17	3	52	0.02
Jun-22	12	2	36	0.01
Jul-22	23	6	42	0.03
Sep-22	80	15	175	0.09
Nov-22	10	2	29	0.01
Feb-23	43	7	88	0.05
Mar-23	76	19	150	0.09
Apr-23	57	10	128	0.06



## 2.6.4 Puffin

2.6.4.1 The density and population estimates of puffin in the Caledonia OWF (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.

2.6.4.2 Table 2–35 includes the unapportioned density and population estimates of puffin, and Table 2–36 includes the apportioned density and population estimates of puffin.

Table 2–35: Unapportioned density and population estimate of puffin in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jun-21	1	6	1	18	0.01	1.00
Jul-21	3	18	3	47	0.04	0.58
Jun-22	1	6	1	17	0.01	1.00
Jul-22	1	6	1	18	0.01	1.00
Sep-22	2	12	2	35	0.03	0.71
<b>Caledonia OWF (+2km)</b>						
Jun-21	3	17	3	35	0.03	0.58
Jul-21	4	23	4	58	0.04	0.50
Jun-22	1	6	1	17	0.01	1.00
Jul-22	1	6	1	17	0.01	1.00
Sep-22	2	12	2	35	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Jun-21	4	24	6	41	0.03	0.50
Jul-21	4	24	4	60	0.03	0.50
Jun-22	1	6	1	17	0.01	1.00
Jul-22	1	6	1	18	0.01	1.00
Sep-22	5	29	5	70	0.03	0.45

Table 2–36: Apportioned density and population estimate of puffin in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Jun-21	6	1	18	0.01
Jul-21	18	3	48	0.04
Jun-22	6	1	17	0.01
Jul-22	6	1	18	0.01
Sep-22	12	2	35	0.03
<b>Caledonia OWF (+2km)</b>				
Jun-21	17	3	35	0.03
Jul-21	23	4	59	0.04
Jun-22	6	1	17	0.01
Jul-22	6	1	17	0.01
Sep-22	12	2	35	0.02
<b>Caledonia OWF (+4km)</b>				
Jun-21	24	6	41	0.03
Jul-21	24	4	61	0.03
Jun-22	6	1	17	0.01
Jul-22	6	1	18	0.01
Sep-22	29	5	70	0.03

## 2.6.6 Black guillemot

2.6.6.1 The density and population estimates of black guillemot in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–37. Table 2–37 includes the unapportioned density and population estimates of black guillemot.

2.6.6.2 There is no apportioned data for black guillemot in flight in the Caledonia OWF.

Table 2–37: Unapportioned density and population estimate of black guillemot in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Not corrected for availability bias.

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

## 2.7 Gaviidae

### 2.7.1 Red-throated diver

2.7.1.1 The density and population estimates of red-throated diver in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–38 and Table 2–39.

2.7.1.2 Table 2–38 includes the unapportioned density and population estimates of red-throated diver, and Table 2–39 includes the apportioned density and population estimates of red-throated diver.

Table 2–38: Unapportioned density and population estimate of red-throated diver in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

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

Table 2–39: Apportioned density and population estimate of red-throated diver in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Oct-22	6	1	18	0.01
<b>Caledonia OWF (+2km)</b>				
Oct-22	6	1	17	0.01
<b>Caledonia OWF (+4km)</b>				
Oct-22	6	1	18	0.01

## 2.7.2 Great northern diver

2.7.2.1 No great northern diver in flight were recorded in the Caledonia OWF.

## 2.8 Procellariidae

### 2.8.1 Unidentified species

#### Unidentified fulmar and/or gull species

2.8.1.1 The density and population estimates of unidentified fulmar and/or gull species in the Caledonia OWF (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 unidentified fulmar and /or gull species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Repeated from Table 2-7.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Nov-22	1	6	1	18	0.01	1.00
Mar-23	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
Nov-22	1	6	1	17	0.01	1.00
Mar-23	1	6	1	17	0.01	1.00
<b>Caledonia OWF (+4km)</b>						
Nov-22	2	12	2	29	0.01	0.71
Mar-23	1	6	1	18	0.01	1.00

## Unidentified small shearwater species

2.8.1.2 The density and population estimates of unidentified small shearwater species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–41.

Table 2–41: Density and population estimate of unidentified small shearwater species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

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

## Unidentified shearwater species

2.8.1.3 No unidentified shearwater species in flight were recorded in the Caledonia OWF.

## Unidentified auk and/or shearwater species

2.8.1.4 The density and population estimates of unidentified auk and/or shearwater species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–42.

Table 2–42: Density and population estimate of unidentified auk and/or shearwater species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. Repeated from Table 2–30.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jul-21	1	6	1	18	0.01	1.00
<b>Caledonia OWF (+2km)</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	1	6	1	17	0.01	1.00
Jul-21	1	6	1	17	0.01	1.00
Jun-22	2	11	2	34	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
May-21	4	23	4	53	0.03	0.50
Jun-21	1	6	1	18	0.01	1.00
Jul-21	1	6	1	18	0.01	1.00
Jun-22	3	17	3	46	0.02	0.58

## 2.8.3 Fulmar

2.8.3.1 The density and population estimates of fulmar in the Caledonia OWF (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.

2.8.3.2 Table 2-43 includes the unapportioned density and population estimates of fulmar, and Table 2-44 includes the apportioned density and population estimates of fulmar.

Table 2-43: Unapportioned density and population estimate of fulmar in flight the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	30	175	117	233	0.41	0.18
Jun-21	20	117	65	176	0.27	0.22
Jul-21	96	566	313	867	1.32	0.10
Aug-21	126	729	544	938	1.71	0.09
Sep-21	15	87	46	133	0.20	0.26
Oct-21	1	6	1	18	0.01	1.00
Nov-21	42	244	70	488	0.57	0.15
Dec-21	81	470	284	673	1.10	0.11
Jan-22	19	110	58	162	0.26	0.23
Feb-22	16	86	43	130	0.20	0.25
Mar-22	6	32	11	54	0.07	0.41
Apr-22	22	127	35	248	0.30	0.21
May-22	9	52	29	75	0.12	0.33
Jun-22	70	402	195	649	0.94	0.12
Jul-22	230	1,345	872	1,883	3.15	0.07
Aug-22	40	231	127	323	0.54	0.16
Sep-22	6	35	12	58	0.08	0.41
Nov-22	116	682	470	911	1.60	0.09



Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	39	228	100	392	0.53	0.16
Jan-23	12	70	29	128	0.16	0.29
Feb-23	14	80	40	121	0.19	0.27
Mar-23	21	123	58	198	0.29	0.22
Apr-23	7	40	11	79	0.09	0.38
<b>Caledonia OWF (+2km)</b>						
May-21	50	287	195	385	0.45	0.14
Jun-21	41	238	162	325	0.37	0.16
Jul-21	149	863	545	1,263	1.34	0.08
Aug-21	201	1,147	822	1,449	1.78	0.07
Sep-21	21	121	69	178	0.19	0.22
Oct-21	2	12	2	29	0.02	0.71
Nov-21	56	320	137	583	0.50	0.13
Dec-21	120	687	424	1,042	1.07	0.09
Jan-22	39	223	131	326	0.35	0.16
Feb-22	30	161	107	225	0.25	0.18
Mar-22	11	58	27	90	0.09	0.30
Apr-22	33	187	85	295	0.29	0.17
May-22	23	132	69	206	0.21	0.21
Jun-22	95	544	309	808	0.85	0.10
Jul-22	325	1,871	1,296	2,510	2.91	0.06
Aug-22	51	292	166	435	0.45	0.14
Sep-22	8	46	17	75	0.07	0.35
Nov-22	180	1,043	800	1,322	1.62	0.07
Dec-22	58	339	169	560	0.53	0.13

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jan-23	22	128	76	186	0.20	0.21
Feb-23	19	109	63	149	0.17	0.23
Mar-23	29	168	81	272	0.26	0.19
Apr-23	13	74	23	130	0.11	0.28
<b>Caledonia OWF (+4km)</b>						
May-21	62	362	245	491	0.41	0.13
Jun-21	59	347	218	482	0.39	0.13
Jul-21	187	1,129	725	1,606	1.28	0.07
Aug-21	262	1,520	1,056	1,932	1.72	0.06
Sep-21	34	199	135	269	0.23	0.17
Oct-21	2	12	2	29	0.01	0.71
Nov-21	72	419	180	693	0.47	0.12
Dec-21	173	1,008	687	1,410	1.14	0.08
Jan-22	46	267	168	377	0.30	0.15
Feb-22	41	225	143	302	0.25	0.16
Mar-22	24	130	70	189	0.15	0.20
Apr-22	38	219	115	340	0.25	0.16
May-22	28	163	75	267	0.18	0.19
Jun-22	130	752	434	1,105	0.85	0.09
Jul-22	440	2,572	1,859	3,337	2.91	0.05
Aug-22	77	442	276	626	0.50	0.11
Sep-22	13	76	47	99	0.09	0.28
Oct-22	2	12	2	35	0.01	0.71
Nov-22	234	1,380	967	1,763	1.56	0.07
Dec-22	80	472	265	731	0.53	0.11

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Jan-23	42	247	129	376	0.28	0.15
Feb-23	30	174	122	226	0.20	0.18
Mar-23	41	241	123	376	0.27	0.16
Apr-23	21	121	57	201	0.14	0.22

Table 2-44: Apportioned density and population estimate of fulmar in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
May-21	175	117	233	0.41
Jun-21	117	65	176	0.27
Jul-21	566	313	867	1.32
Aug-21	729	544	938	1.70
Sep-21	87	46	133	0.20
Oct-21	6	1	18	0.01
Nov-21	244	70	488	0.57
Dec-21	470	284	673	1.10
Jan-22	110	58	162	0.26
Feb-22	86	43	130	0.20
Mar-22	32	11	54	0.07
Apr-22	127	35	248	0.30
May-22	52	29	75	0.12
Jun-22	402	195	649	0.94
Jul-22	1,345	872	1,883	3.15
Aug-22	231	127	323	0.54
Sep-22	35	12	58	0.08
Nov-22	687	471	926	1.61
Dec-22	228	100	392	0.53
Jan-23	70	29	128	0.16
Feb-23	80	40	121	0.19
Mar-23	129	59	215	0.30
Apr-23	40	11	79	0.09

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF (+2km)</b>				
May-21	287	195	385	0.45
Jun-21	238	162	325	0.37
Jul-21	863	545	1,263	1.34
Aug-21	1,147	822	1,449	1.78
Sep-21	121	69	178	0.19
Oct-21	12	2	29	0.02
Nov-21	320	137	583	0.50
Dec-21	687	424	1,042	1.07
Jan-22	223	131	326	0.35
Feb-22	161	107	225	0.25
Mar-22	58	27	90	0.09
Apr-22	187	85	295	0.29
May-22	132	69	206	0.20
Jun-22	544	309	808	0.84
Jul-22	1,871	1,296	2,510	2.91
Aug-22	292	166	435	0.45
Sep-22	46	17	75	0.07
Nov-22	1,048	801	1,336	1.63
Dec-22	339	169	560	0.53
Jan-23	128	76	186	0.20
Feb-23	109	63	149	0.17
Mar-23	173	82	285	0.27
Apr-23	74	23	130	0.11

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF (+4km)</b>				
May-21	362	245	491	0.41
Jun-21	347	218	482	0.39
Jul-21	1,129	725	1,606	1.28
Aug-21	1,520	1,056	1,932	1.72
Sep-21	199	135	269	0.23
Oct-21	12	2	29	0.01
Nov-21	419	180	693	0.47
Dec-21	1,008	687	1,410	1.14
Jan-22	267	168	377	0.30
Feb-22	225	143	302	0.25
Mar-22	130	70	189	0.15
Apr-22	219	115	340	0.25
May-22	163	75	267	0.18
Jun-22	752	434	1,105	0.85
Jul-22	2,572	1,859	3,337	2.91
Aug-22	442	276	626	0.50
Sep-22	76	47	99	0.09
Oct-22	12	2	35	0.01
Nov-22	1,391	969	1,788	1.57
Dec-22	472	265	731	0.53
Jan-23	247	129	376	0.28
Feb-23	174	122	226	0.20
Mar-23	246	124	390	0.28
Apr-23	121	57	201	0.14

## 2.8.4 Sooty shearwater

2.8.4.1 The density and population estimates of sooty shearwater in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-45 and Table 2-46.

2.8.4.2 Table 2-45 includes the unapportioned density and population estimates of sooty shearwater, and Table 2-46 includes the apportioned density and population estimates of sooty shearwater.

Table 2-45: Unapportioned density and population estimate of sooty shearwater in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Sep-21	1	6	1	17	1	0.01
<b>Caledonia OWF (+2km)</b>						
Sep-21	1	6	1	17	1	0.01
<b>Caledonia OWF (+4km)</b>						
Sep-21	1	6	1	18	1	0.01

Table 2-46: Apportioned density and population estimate of sooty shearwater in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Sep-21	6	1	17	0.01
<b>Caledonia OWF (+2km)</b>				
Sep-21	6	1	17	0.01
<b>Caledonia OWF (+4km)</b>				
Sep-21	6	1	18	0.01

## 2.8.5 Manx shearwater

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

2.8.5.2 Table 2–47 includes the unapportioned density and population estimates of Manx shearwater, and Table 2–48 includes the apportioned density and population estimates of Manx shearwater.

Table 2–47: Unapportioned density and population estimate of Manx shearwater in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Jun-21	2	12	2	29	0.03	0.71
May-22	2	12	2	29	0.03	0.71
<b>Caledonia OWF (+2km)</b>						
Jun-21	2	12	2	29	0.02	0.71
May-22	2	11	2	29	0.02	0.71
<b>Caledonia OWF (+4km)</b>						
Jun-21	6	35	6	88	0.04	0.41
May-22	3	17	3	35	0.02	0.58



Table 2-48: Apportioned density and population estimate of Manx shearwater in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Abundance Estimate			Density
	Abundance	LCI	UCI	
<b>Caledonia OWF</b>				
Jun-21	12	2	30	0.03
May-22	12	2	29	0.03
<b>Caledonia OWF (+2km)</b>				
Jun-21	12	2	29	0.02
May-22	11	2	29	0.02
<b>Caledonia OWF (+4km)</b>				
Jun-21	35	6	89	0.04
May-22	17	3	35	0.02

## 2.9 Sulidae

### 2.9.1 Gannet

2.9.1.1 The density and population estimates of gannet species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2-49.

Table 2-49: Density and population estimate of gannet in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis. No apportionment required for this species.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
May-21	1	6	1	17	0.01	1.00
Jun-21	21	123	59	205	0.29	0.22
Jul-21	6	35	6	71	0.08	0.41
Aug-21	18	104	64	139	0.24	0.24
Sep-21	20	116	58	186	0.27	0.22
Oct-21	32	187	117	269	0.44	0.18
Nov-21	7	41	17	64	0.10	0.38
Dec-21	2	12	2	29	0.03	0.71
Jan-22	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	3	17	6	35	0.04	0.58
May-22	1	6	1	17	0.01	1.00
Jun-22	89	511	98	1,224	1.20	0.11
Jul-22	15	88	41	140	0.21	0.26
Aug-22	6	35	6	69	0.08	0.41
Sep-22	31	179	81	278	0.42	0.18
Oct-22	8	47	12	99	0.11	0.35
Nov-22	1	6	1	18	0.01	1.00

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Dec-22	1	6	1	18	0.01	1.00
Jan-23	1	6	1	17	0.01	1.00
Feb-23	1	6	1	17	0.01	1.00
Apr-23	6	34	6	91	0.08	0.41
<b>Caledonia OWF (+2km)</b>						
May-21	8	46	17	80	0.07	0.35
Jun-21	32	186	99	284	0.29	0.18
Jul-21	7	41	7	87	0.06	0.38
Aug-21	30	171	103	245	0.27	0.18
Sep-21	32	184	121	247	0.29	0.18
Oct-21	43	248	161	329	0.39	0.15
Nov-21	9	51	23	80	0.08	0.33
Dec-21	2	11	2	29	0.02	0.71
Jan-22	1	6	1	17	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	4	23	6	40	0.04	0.50
May-22	1	6	1	17	0.01	1.00
Jun-22	93	533	97	1249	0.83	0.10
Jul-22	20	115	52	190	0.18	0.22
Aug-22	8	46	11	80	0.07	0.35
Sep-22	51	294	179	404	0.46	0.14
Oct-22	14	82	23	146	0.13	0.27
Nov-22	1	6	1	17	0.01	1.00
Dec-22	3	18	3	35	0.03	0.58
Jan-23	2	12	2	29	0.02	0.71

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	2	11	2	29	0.02	0.71
Mar-23	1	6	1	17	0.01	1.00
Apr-23	6	34	6	96	0.05	0.41
<b>Caledonia OWF (+4km)</b>						
May-21	10	58	23	99	0.07	0.32
Jun-21	46	271	141	447	0.31	0.15
Jul-21	14	85	36	139	0.10	0.27
Aug-21	47	273	180	371	0.31	0.15
Sep-21	39	228	140	310	0.26	0.16
Oct-21	59	345	193	503	0.39	0.13
Nov-21	11	64	29	99	0.07	0.30
Dec-21	2	12	2	29	0.01	0.71
Jan-22	1	6	1	17	0.01	1.00
Feb-22	1	5	1	16	0.01	1.00
Mar-22	1	5	1	16	0.01	1.00
Apr-22	9	52	12	110	0.06	0.33
May-22	3	17	3	35	0.02	0.58
Jun-22	101	585	133	1,308	0.66	0.10
Jul-22	34	199	88	316	0.23	0.17
Aug-22	8	46	11	86	0.05	0.35
Sep-22	62	362	210	537	0.41	0.13
Oct-22	30	176	59	347	0.20	0.18
Nov-22	1	6	1	18	0.01	1.00
Dec-22	4	24	4	47	0.03	0.50
Jan-23	3	18	3	35	0.02	0.58

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
Feb-23	4	23	4	52	0.03	0.50
Mar-23	1	6	1	18	0.01	1.00
Apr-23	6	34	6	98	0.04	0.41

## 2.10 Turdidae

### 2.10.1 Unidentified thrush species

2.10.1.1 The density and population estimates of unidentified thrush species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–50.

Table 2–50: Density and population estimate of unidentified thrush species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Oct-22	17	99	18	228	0.23	0.24
<b>Caledonia OWF (+2km)</b>						
Oct-22	114	664	114	1,736	1.03	0.09
<b>Caledonia OWF (+4km)</b>						
Oct-22	289	1,699	364	3,221	1.92	0.06

## 2.11 Passeriformes

### 2.11.1 Unidentified passerine species

2.11.1.1 The density and population estimates of unidentified passerine species in the Caledonia OWF (plus the 2km buffer and plus the 4km buffer, calculated using design-based analysis) have been presented in Table 2–51.

Table 2–51: Density and population estimate of unidentified passerine species in flight in the Caledonia OWF; plus 2km buffer and plus 4km buffer, calculated using design-based analysis.

Survey	Raw Count	Abundance Estimate			Density	CV
		Abundance	LCI	UCI		
<b>Caledonia OWF</b>						
Oct-22	16	93	16	257	0.22	0.25
<b>Caledonia OWF (+2km)</b>						
Oct-22	17	99	17	285	0.15	0.24
<b>Caledonia OWF (+4km)</b>						
Oct-22	78	459	94	894	0.52	0.11

### 3 References

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



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