

BERWICK BANK WIND FARM OFFSHORE ENVIRONMENTAL IMPACT ASSESSMENT

**APPENDIX 11.1, ANNEX H:
DESIGN-BASED ANALYSIS –
POPULATION ESTIMATES FOR
ALL BIRDS GROUPED BY
SPECIES (BERWICK BANK
DEVELOPMENT ARRAY ONLY)**

Document Status

Version	Purpose of Document	Authored by	Reviewed by	Approved by	Review Date
Final	SSER Review	HiDef Aerial Surveying Ltd.	HiDef Aerial Surveying Ltd.	HiDef Aerial Surveying Ltd.	July 2022

Compiled by HiDef Aerial Surveying Ltd.

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Approval for Issue

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NOTE

This annex provides both apportioned (detections assigned from species groups to species) and unapportioned (detections assigned to species only) density and population estimates for focal species within the Berwick Bank Development Array only. Estimates presented for auk species do not account for availability bias. Further EIA/HRA assessments should rely on those that have this correction applied (see Annex K).

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Table 1: Unapportioned density and population estimates of all common scoters in the Berwick Bank Development Array only, calculated using design-based analysis

All Common scoter	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 2: Apportioned density and population estimates of all common scoters in the Berwick Bank Development Array only, calculated using design-based analysis

All Common scoter	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0

All Common scoter	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 3: Unapportioned density and population estimates of all kittiwakes in the Berwick Bank Development Array only, calculated using design-based analysis

All Kittiwake	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	15.1	7.85	23.42	15262	7933	23671	4087	26.78%
May-19	4.09	2.96	5.24	4138	2993	5299	619	14.94%
Jun-19	2.59	2.07	3.22	2616	2088	3257	307	11.73%
Jul-19	4.97	4.22	5.71	5023	4263	5767	380	7.55%
Aug-19	6.91	5.83	8.06	6989	5890	8143	585	8.36%
Sep-19	2.18	1.52	3	2208	1538	3035	391	17.7%
Oct-19	0.58	0.45	0.74	592	452	749	78	13.17%
Nov-19	0.27	0.15	0.41	272	153	414	67	24.38%
Dec-19	0.27	0.13	0.5	277	135	508	97	35.12%
Jan-20	2.1	1.14	3.4	2127	1156	3441	592	27.82%
Feb-20	1.83	0.91	3.03	1845	920	3064	518	28.05%
Mar-20	5.51	4	6.89	5566	4039	6966	747	13.41%
May S01 20	6.15	2.65	10.38	6215	2677	10495	1968	31.67%
May S02 20	8.35	6.23	10.71	8439	6299	10823	1242	14.71%
Jun-20	9.01	7.42	10.52	9108	7496	10631	809	8.88%
Jul-20	8.72	6.85	10.75	8812	6924	10866	1011	11.46%
Aug-20	13.26	9.58	17.28	13405	9683	17464	2015	15.03%
Sep-20	15.94	10.73	22.73	16112	10844	22981	3180	19.73%
Oct-20	1.46	0.92	2.13	1475	930	2150	325	21.99%
Nov-20	4.73	2.8	6.98	4787	2834	7052	1091	22.79%
Dec-20	1.04	0.66	1.49	1047	665	1504	226	21.58%
Jan-21	2.2	1.27	3.34	2224	1282	3375	521	23.4%
Feb-21	2.79	0.58	6.03	2822	589	6091	1458	51.65%
Apr S01 21	6.72	4.85	8.93	6794	4902	9029	1060	15.59%
Apr S02 21	20.51	10.57	32.76	20736	10686	33118	5781	27.88%

Table 4: Apportioned density and population estimates of all kittiwakes in the Berwick Bank Development Array only, calculated using design-based analysis

All Kittiwake	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	15.19	8.29	23.38	15358	8377	23629	3977	25.89%
May-19	4.13	2.93	5.57	4176	2958	5632	673	16.1%
Jun-19	2.65	2.09	3.35	2681	2113	3382	319	11.88%
Jul-19	5.02	4.34	5.69	5075	4389	5753	360	7.08%
Aug-19	6.93	5.72	8.22	7004	5783	8307	646	9.21%
Sep-19	2.15	1.45	2.98	2173	1466	3016	410	18.85%
Oct-19	0.62	0.46	0.78	625	467	794	83	13.18%
Nov-19	0.29	0.18	0.41	295	178	415	65	22.03%
Dec-19	0.28	0.15	0.49	288	156	491	90	31.05%
Jan-20	2.19	1.11	3.59	2215	1125	3632	642	28.98%
Feb-20	1.91	0.97	3.08	1929	977	3116	557	28.86%
Mar-20	5.59	4	7.1	5648	4046	7179	796	14.09%
May S01 20	6.53	2.37	11.29	6601	2399	11410	2208	33.45%
May S02 20	8.41	6.19	10.81	8498	6258	10925	1273	14.98%
Jun-20	9.06	7.45	10.72	9159	7534	10841	884	9.65%
Jul-20	8.69	6.95	10.84	8785	7022	10958	1054	11.99%
Aug-20	13.32	9.56	17.38	13464	9666	17568	2033	15.1%
Sep-20	16.11	10.67	22.37	16282	10789	22614	3135	19.25%
Oct-20	1.49	0.88	2.23	1508	885	2255	361	23.89%
Nov-20	4.84	2.72	7.03	4888	2749	7106	1174	24.01%
Dec-20	1.09	0.68	1.63	1104	690	1644	251	22.69%
Jan-21	2.19	1.35	3.22	2210	1369	3257	484	21.87%
Feb-21	2.83	0.58	5.72	2857	586	5785	1445	50.57%
Apr S01 21	6.85	4.91	9.08	6924	4969	9179	1059	15.28%
Apr S02 21	20.7	10.61	32.66	20923	10721	33018	5943	28.4%

Table 5: Unapportioned density and population estimates of all black-headed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Black-headed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0

All Black-headed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 6: Apportioned density and population estimates of all black-headed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Black-headed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	1	0	1	1	92.97%
Nov-19	0	0	0	1	0	1	1	62.25%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	1	0	1	1	100.21%
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 7: Unapportioned density and population estimates of all little gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Little gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0.01	0	0.03	8	0	26	9	101.01%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.01	0	0.02	7	0	22	7	104.32%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0.02	0	0.06	25	0	64	18	72%
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.01	0	0.03	9	0	31	9	101.76%
Aug-20	0.07	0	0.18	72	0	187	52	71.81%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.02	8	0	24	8	95.66%
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0.02	0	0.04	16	0	39	11	66.41%

Table 8: Apportioned density and population estimates of all little gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Little gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0.01	0	0.03	8	0	30	9	105.65%
Sep-19	0	0	0	1	0	1	1	87.67%
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.01	0	0.03	8	0	28	8	99.5%
Dec-19	0	0	0	0	0	0	0	0

All Little gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Jan-20	0	0	0	1	0	1	1	93.4%
Feb-20	0.02	0	0.06	24	0	64	18	72.78%
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.01	0	0.02	9	0	24	8	96.8%
Aug-20	0.12	0.03	0.24	124	32	241	53	42.09%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	1	0	1	1	94.05%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.02	9	0	24	8	88.83%
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0.03	0.01	0.06	31	9	60	13	41.25%

Table 9: Unapportioned density and population estimates of all common gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Common gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.03	15	0	31	9	58.93%
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.01	0	0.04	15	0	43	14	93.89%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.07	0.01	0.15	67	15	151	38	56.48%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0.04	0	0.08	41	0	84	21	50.83%
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0.03	0	0.08	32	0	77	20	62.02%
Sep-20	0.01	0	0.02	8	0	24	8	104.11%
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.02	9	0	24	8	95.83%
Jan-21	0.02	0	0.05	23	0	48	12	52.62%
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0.02	0	0.04	17	0	40	11	63.92%

All Common gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Apr S02 21	0.05	0.01	0.11	50	8	107	27	53.47%

Table 10: Apportioned density and population estimates of all common gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Common gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.03	15	0	32	9	61.2%
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.01	0	0.04	15	0	42	13	88.13%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	1	0	1	1	92.59%
Nov-19	0.09	0.01	0.17	90	16	173	43	47.42%
Dec-19	0	0	0	2	0	4	2	96.92%
Jan-20	0	0	0	1	0	1	1	89.26%
Feb-20	0.04	0	0.08	41	0	83	21	50.25%
Mar-20	0	0	0	1	1	1	1	44.88%
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	1	0	1	1	89.09%
Aug-20	0.03	0	0.08	33	1	79	21	62.42%
Sep-20	0.01	0	0.02	8	0	24	8	97.55%
Oct-20	0	0	0	1	0	1	1	88.71%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.03	14	2	32	9	60.52%
Jan-21	0.02	0	0.05	24	0	53	13	53.55%
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0.02	0	0.04	16	1	39	11	65.43%
Apr S02 21	0.05	0.01	0.09	48	8	94	23	47.18%

Table 11: Unapportioned density and population estimates of all great black-backed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Great black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0.01	0	0.02	8	0	24	8	97.42%
Jul-19	0	0	0	0	0	0	0	0

All Great black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.08	0	0.25	85	0	248	78	91.36%
Dec-19	0.01	0	0.02	7	0	22	7	95.86%
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.02	0	0.04	16	0	39	10	63.1%
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.02	8	0	24	8	91.66%
Jan-21	0.04	0.01	0.07	39	15	70	15	37.07%
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 12: Apportioned density and population estimates of all great black-backed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Great black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0.01	0	0.02	9	1	26	7	77.5%
Jul-19	0	0	0	1	0	2	1	57.73%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.09	0	0.25	87	0	253	81	92.66%
Dec-19	0.01	0	0.02	7	0	21	7	92.91%
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.02	0	0.04	19	2	41	11	55.21%
Aug-20	0	0	0	1	0	1	1	92.28%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0

All Great black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.01	0	0.02	9	0	24	8	94.47%
Jan-21	0.04	0.01	0.07	40	15	71	15	37.28%
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 13: Unapportioned density and population estimates of all herring gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Herring gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.02	8	0	20	7	86.89%
May-19	0	0	0	0	0	0	0	0
Jun-19	1.15	0.57	1.77	1159	578	1795	321	27.66%
Jul-19	0.25	0.15	0.37	257	148	376	58	22.41%
Aug-19	0.04	0.01	0.08	40	8	78	18	44.11%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.05	0.01	0.09	48	15	96	23	48.4%
Dec-19	0.01	0	0.02	7	0	21	7	98.33%
Jan-20	0.01	0	0.03	9	0	28	8	92.66%
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	2.31	1.4	3.42	2340	1418	3461	539	23.03%
Aug-20	0.06	0.02	0.09	57	16	95	21	35.89%
Sep-20	0.06	0.02	0.1	57	23	104	22	37.37%
Oct-20	0.01	0	0.02	8	0	24	8	101.64%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.06	0.01	0.11	57	12	107	26	44.75%
Jan-21	0.06	0.02	0.11	63	16	117	27	42.31%
Feb-21	0.01	0	0.03	9	0	30	9	94.36%
Apr S01 21	0.01	0	0.02	9	0	24	8	95.59%
Apr S02 21	0	0	0	0	0	0	0	0

Table 14: Apportioned density and population estimates of all herring gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Herring gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.02	8	0	21	7	89.01%
May-19	0	0	0	0	0	0	0	0
Jun-19	1.21	0.6	1.86	1221	608	1882	334	27.3%
Jul-19	0.3	0.2	0.41	300	199	415	58	19.24%
Aug-19	0.05	0.01	0.08	47	15	85	19	38.97%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.09	0.01	0.24	96	14	239	64	66.29%
Dec-19	0.01	0	0.02	7	0	21	6	84.07%
Jan-20	0.01	0	0.03	14	1	34	9	63.07%
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	2.39	1.5	3.45	2419	1517	3487	534	22.05%
Aug-20	0.09	0.04	0.13	88	42	136	26	28.6%
Sep-20	0.06	0.02	0.12	65	18	122	27	41.31%
Oct-20	0.01	0	0.02	9	0	24	8	95.1%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.06	0.02	0.11	60	16	108	25	40.72%
Jan-21	0.07	0.02	0.13	70	23	134	29	41.61%
Feb-21	0.02	0	0.03	16	2	34	9	52.05%
Apr S01 21	0.01	0	0.03	11	0	29	8	73.34%
Apr S02 21	0.01	0	0.02	8	0	16	5	52.52%

Table 15: Unapportioned density and population estimates of all lesser black-backed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Lesser black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0.07	0.02	0.11	71	24	116	22	30.62%
Jul-19	0.12	0.08	0.16	118	77	161	23	18.81%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0

All Lesser black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.01	0	0.02	8	0	24	7	96.21%
Jul-20	0.47	0.34	0.63	471	348	639	75	15.86%
Aug-20	0.01	0	0.02	9	0	24	7	85.52%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 16: Apportioned density and population estimates of all lesser black-backed gulls in the Berwick Bank Development Array only, calculated using design-based analysis

All Lesser black-backed gull	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0.08	0.03	0.13	79	35	129	25	31.95%
Jul-19	0.12	0.08	0.16	124	80	166	23	18.17%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	1	0	1	1	87.88%
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.01	0	0.02	8	0	24	8	103.56%
Jul-20	0.48	0.35	0.65	484	350	657	79	16.16%
Aug-20	0.01	0	0.03	11	1	27	7	63.73%
Sep-20	0	0	0	1	0	2	1	93.4%
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 17: Unapportioned density and population estimates of all common terns in the Berwick Bank Development Array only, calculated using design-based analysis

All Common tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0.01	0	0.02	8	0	24	8	91.79%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0.01	0	0.03	9	0	30	9	99.71%
May S02 20	0.01	0	0.02	9	0	24	8	89.32%
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.05	0	0.14	50	0	144	48	96.71%
Aug-20	0.02	0	0.04	17	0	39	11	64.83%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 18: Apportioned density and population estimates of all common terns in the Berwick Bank Development Array only, calculated using design-based analysis

All Common tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.07	0.04	0.09	66	45	92	13	18.98%
Aug-19	0.21	0.16	0.26	208	166	263	26	12.29%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0

All Common tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0.02	0	0.04	20	3	41	11	53.13%
May S02 20	0.01	0	0.03	15	3	34	9	61.11%
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0.07	0.01	0.19	71	7	189	54	76.23%
Aug-20	2.37	1.05	3.88	2395	1062	3925	753	31.44%
Sep-20	0.06	0	0.15	57	0	157	49	85.65%
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 19: Unapportioned density and population estimates of all Arctic terns in the Berwick Bank Development Array only, calculated using design-based analysis

All Arctic tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.14	0.05	0.27	142	55	272	60	41.67%
Aug-19	0.12	0.05	0.21	122	47	212	45	36.73%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.02	0	0.06	24	0	62	17	70.2%
Jul-20	0.03	0	0.09	32	0	96	32	100.7%
Aug-20	0.04	0	0.08	39	0	80	21	52.16%
Sep-20	0.01	0	0.03	9	0	31	9	98.89%
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0

All Arctic tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Apr S02 21	0	0	0	0	0	0	0	0

Table 20: Apportioned density and population estimates of all Arctic terns in the Berwick Bank Development Array only, calculated using design-based analysis

All Arctic tern	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0.04	0	0.12	41	0	119	38	91.66%
Jun-19	0.04	0	0.09	41	0	87	23	55.37%
Jul-19	1.09	0.71	1.55	1103	716	1566	219	19.85%
Aug-19	2.65	2.08	3.31	2674	2101	3348	328	12.27%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0.02	0	0.04	19	0	45	13	65.61%
May S02 20	0.07	0.02	0.12	67	21	126	28	40.62%
Jun-20	0.03	0	0.08	32	0	77	21	64.46%
Jul-20	0.06	0.01	0.15	63	13	154	38	59%
Aug-20	0.53	0.29	0.79	537	297	801	138	25.58%
Sep-20	0.02	0	0.05	20	0	49	13	65.95%
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 21: Unapportioned density and population estimates of all great skuas in the Berwick Bank Development Array only, calculated using design-based analysis

All Great skua	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0.01	0	0.02	8	0	24	8	98.89%

All Great skua	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.01	0	0.02	8	0	24	7	90.8%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0.01	0	0.03	10	0	30	9	88.07%
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.01	0	0.02	9	0	24	8	91.3%
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0.01	0	0.02	8	0	24	8	98.37%
Nov-20	0.02	0	0.05	24	4	51	13	53.07%
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 22: Apportioned density and population estimates of all great skuas in the Berwick Bank Development Array only, calculated using design-based analysis

All Great skua	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0.01	0	0.02	9	0	24	8	94.12%
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0.01	0	0.02	9	0	24	8	93.1%
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0.01	0	0.03	9	0	27	9	93.48%
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.01	0	0.02	9	0	24	8	91.99%
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0

All Great skua	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0.01	0	0.02	8	0	24	8	95.97%
Nov-20	0.03	0	0.07	32	0	73	18	55.5%
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 23: Unapportioned density and population estimates of all little auks in the Berwick Bank Development Array only, calculated using design-based analysis

All Little auk	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.02	7	0	21	7	94.46%
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.02	0	0.04	16	0	38	10	61.2%
Dec-19	0.01	0	0.02	7	0	21	7	92.63%
Jan-20	0.05	0.01	0.1	52	9	104	24	45.47%
Feb-20	0.01	0	0.02	8	0	24	8	97.9%
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0.02	0	0.06	25	0	64	18	72.33%
Dec-20	0.3	0.14	0.49	307	144	492	91	29.41%
Jan-21	0.03	0	0.08	26	0	81	24	92.49%
Feb-21	0.01	0	0.02	8	0	24	8	94.57%
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 24: Apportioned density and population estimates of all little auks in the Berwick Bank Development Array only, calculated using design-based analysis

All Little auk	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.01	0	0.02	9	2	22	6	71.19%
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	3	2	4	1	15.66%
Nov-19	0.02	0	0.05	24	4	48	12	49.79%
Dec-19	0.01	0	0.03	15	2	31	9	56.89%
Jan-20	0.11	0.04	0.19	110	44	196	39	35.07%
Feb-20	0.06	0.03	0.1	64	31	105	19	29.26%
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0.03	0.01	0.07	35	8	72	17	48.51%
Dec-20	0.43	0.21	0.7	440	216	704	120	27.13%
Jan-21	0.13	0.09	0.18	135	94	184	24	17.43%
Feb-21	0.02	0	0.03	16	4	31	8	50.19%
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 25: Unapportioned density and population estimates of all guillemots in the Berwick Bank Development Array only, calculated using design-based analysis

All Guillemot	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	9.15	6.2	12.35	9254	6266	12484	1541	16.65%
May-19	22.03	17.25	28.9	22266	17440	29211	3067	13.77%
Jun-19	5.48	3.65	7.82	5537	3687	7908	1082	19.54%
Jul-19	22.5	18.4	27.3	22747	18605	27601	2323	10.21%
Aug-19	25.9	16.64	39.38	26185	16817	39810	6095	23.28%
Sep-19	3.02	2.36	3.72	3053	2388	3763	343	11.21%
Oct-19	1.35	0.71	2.28	1367	721	2304	410	29.96%
Nov-19	0.63	0.46	0.84	639	466	854	101	15.67%
Dec-19	1.25	0.76	1.76	1264	769	1778	261	20.65%
Jan-20	8.88	5.86	12.75	8979	5924	12893	1852	20.62%
Feb-20	6.51	4.17	8.74	6576	4221	8831	1160	17.63%
Mar-20	22.21	15.04	28.76	22456	15201	29071	3494	15.56%

All Guillemot	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
May S01 20	15.87	9.92	22.55	16044	10030	22790	3284	20.47%
May S02 20	14.97	9.73	20.85	15134	9831	21073	2853	18.85%
Jun-20	35.6	27.82	43.36	35986	28124	43832	3992	11.09%
Jul-20	8.21	6.48	9.97	8300	6554	10082	915	11.01%
Aug-20	22.75	19.67	25.51	22993	19884	25788	1569	6.82%
Sep-20	25.67	18.79	32.91	25948	18995	33266	3643	14.04%
Oct-20	2.18	1.6	2.8	2206	1614	2835	313	14.15%
Nov-20	1.6	1.18	2.12	1621	1192	2143	255	15.68%
Dec-20	10.82	7.24	15.87	10934	7323	16041	2297	21%
Jan-21	7.42	5.91	8.93	7498	5971	9025	828	11.04%
Feb-21	4.47	2.85	6.7	4517	2885	6776	1011	22.37%
Apr S01 21	19.93	16.33	23.66	20142	16505	23913	1878	9.32%
Apr S02 21	53.32	38.78	66.97	53895	39206	67700	7166	13.29%

Table 26: Apportioned density and population estimates of all guillemots in the Berwick Bank Development Array only, calculated using design-based analysis

All Guillemot	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	9.63	6.85	13.17	9732	6924	13313	1645	16.9%
May-19	22.85	17.59	29.56	23100	17779	29882	3203	13.86%
Jun-19	5.67	3.63	7.86	5736	3670	7950	1097	19.12%
Jul-19	24.44	20.26	29.17	24707	20480	29490	2332	9.44%
Aug-19	27.34	16.85	40.23	27640	17035	40671	6141	22.22%
Sep-19	3.86	3.14	4.61	3906	3174	4663	402	10.28%
Oct-19	1.52	0.85	2.51	1542	860	2537	422	27.38%
Nov-19	0.75	0.55	0.94	755	560	956	110	14.45%
Dec-19	1.38	0.93	1.85	1397	940	1871	242	17.28%
Jan-20	9.86	6.91	14.12	9963	6985	14271	1794	18.01%
Feb-20	7.35	4.91	9.67	7432	4964	9779	1288	17.32%
Mar-20	24.67	17.1	31.59	24942	17288	31935	3734	14.97%
May S01 20	16.83	10.62	23.94	17011	10734	24199	3466	20.37%
May S02 20	15.7	10.38	21.73	15873	10497	21964	3010	18.96%
Jun-20	35.91	28.51	43.65	36300	28822	44124	4080	11.24%
Jul-20	8.89	6.94	11.03	8983	7020	11155	1083	12.06%
Aug-20	23.69	20.78	26.4	23949	21004	26683	1556	6.49%
Sep-20	26.96	20.3	35.08	27249	20524	35466	3683	13.51%
Oct-20	2.38	1.81	3.1	2408	1831	3129	338	14.01%
Nov-20	1.72	1.22	2.27	1743	1233	2290	278	15.94%
Dec-20	11.44	7.44	16.37	11563	7519	16547	2305	19.93%
Jan-21	8.22	6.71	9.83	8313	6779	9941	846	10.18%
Feb-21	5.08	3.18	7.21	5137	3219	7289	1050	20.43%
Apr S01 21	20.89	17.47	24.5	21115	17661	24770	1913	9.06%
Apr S02 21	54.16	40.63	69.49	54752	41068	70248	7448	13.6%

Table 27: Unapportioned density and population estimates of all razorbills in the Berwick Bank Development Array only, calculated using design-based analysis

All Razorbill	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	1.2	0.65	1.9	1215	662	1922	348	28.64%
May-19	1.08	0.77	1.45	1097	782	1462	182	16.58%
Jun-19	0.17	0.03	0.36	169	31	362	94	55.4%
Jul-19	1.88	1.11	2.79	1900	1118	2822	446	23.46%
Aug-19	1.34	0.82	2.05	1351	830	2073	307	22.7%
Sep-19	1.04	0.69	1.41	1049	703	1423	197	18.77%
Oct-19	0.51	0.24	0.82	519	241	832	148	28.52%
Nov-19	0.08	0.04	0.13	86	38	131	24	27.36%
Dec-19	0.27	0.12	0.43	271	124	440	82	29.96%
Jan-20	1.05	0.53	1.61	1064	540	1625	272	25.51%
Feb-20	0.9	0.59	1.32	911	600	1334	191	20.93%
Mar-20	4.94	3.33	6.43	4996	3365	6503	784	15.69%
May S01 20	0.72	0.43	1.06	725	430	1074	170	23.38%
May S02 20	0.4	0.17	0.69	403	172	694	141	34.88%
Jun-20	0.8	0.56	1.12	813	569	1129	148	18.15%
Jul-20	1.36	0.77	2.1	1376	776	2122	370	26.83%
Aug-20	2.72	1.87	3.65	2751	1894	3689	464	16.87%
Sep-20	8.11	5.61	11.12	8201	5670	11244	1486	18.12%
Oct-20	0.56	0.25	0.97	568	251	984	190	33.43%
Nov-20	0.2	0.09	0.31	198	88	316	60	30.03%
Dec-20	1.06	0.57	1.56	1068	572	1580	259	24.19%
Jan-21	2.69	1.91	3.64	2720	1930	3679	437	16.04%
Feb-21	1.15	0.65	1.7	1159	661	1714	270	23.28%
Apr S01 21	2.84	1.74	4.07	2871	1755	4110	585	20.36%
Apr S02 21	1.17	0.88	1.49	1181	888	1509	155	13.08%

Table 28: Apportioned density and population estimates of all razorbills in the Berwick Bank Development Array only, calculated using design-based analysis

All Razorbill	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	1.29	0.74	1.97	1302	744	1993	327	25.11%
May-19	1.18	0.87	1.54	1195	885	1555	178	14.85%
Jun-19	0.18	0.05	0.39	185	53	391	94	50.59%
Jul-19	2.08	1.31	2.91	2101	1321	2945	428	20.38%
Aug-19	1.52	0.98	2.15	1542	992	2177	306	19.81%
Sep-19	1.22	0.88	1.64	1236	890	1657	198	16.01%
Oct-19	0.71	0.41	1.06	718	418	1076	174	24.15%
Nov-19	0.12	0.07	0.17	119	72	171	26	21.19%
Dec-19	0.38	0.18	0.64	388	187	643	120	30.95%
Jan-20	1.47	0.91	2.12	1486	924	2139	306	20.55%
Feb-20	0.99	0.67	1.41	1002	679	1421	200	19.94%
Mar-20	5.33	3.79	7	5385	3827	7072	843	15.64%

All Razorbill	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
May S01 20	0.79	0.43	1.16	801	438	1177	188	23.37%
May S02 20	0.47	0.23	0.8	476	236	808	145	30.4%
Jun-20	0.85	0.56	1.14	860	568	1153	154	17.88%
Jul-20	1.5	0.8	2.4	1517	812	2427	423	27.89%
Aug-20	2.9	2.06	3.89	2935	2078	3930	483	16.43%
Sep-20	8.97	5.9	12.61	9072	5965	12745	1698	18.71%
Oct-20	0.76	0.41	1.15	765	411	1166	191	24.88%
Nov-20	0.27	0.15	0.4	274	154	403	65	23.73%
Dec-20	1.52	0.97	2.15	1537	981	2170	317	20.59%
Jan-21	3.18	2.42	4.19	3218	2445	4233	449	13.95%
Feb-21	1.34	0.81	2	1356	815	2020	303	22.32%
Apr S01 21	3.14	2.05	4.24	3171	2076	4290	582	18.35%
Apr S02 21	1.31	0.99	1.64	1325	1006	1660	169	12.74%

Table 29: Unapportioned density and population estimates of all puffins in the Berwick Bank Development Array only, calculated using design-based analysis

All Puffin	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.77	0.48	1.11	782	487	1119	167	21.24%
May-19	1.61	1.3	1.9	1627	1310	1922	155	9.5%
Jun-19	0.26	0.13	0.45	268	133	456	86	31.95%
Jul-19	1.66	1.24	2.08	1683	1255	2102	226	13.38%
Aug-19	2.17	1.59	2.68	2196	1605	2707	286	13.02%
Sep-19	0.6	0.22	1.13	603	226	1140	247	40.99%
Oct-19	0.15	0.08	0.23	153	77	236	41	26.76%
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0.02	0	0.04	17	0	40	11	60.82%
Feb-20	0.03	0	0.07	32	0	71	17	53.57%
Mar-20	0.27	0.13	0.44	272	128	446	79	29.01%
May S01 20	0.62	0.34	0.9	624	344	909	151	24.14%
May S02 20	0.35	0.24	0.44	350	243	449	54	15.28%
Jun-20	0.42	0.25	0.59	422	258	597	89	21.04%
Jul-20	0.66	0.32	1.16	664	319	1175	235	35.34%
Aug-20	1.13	0.76	1.55	1146	771	1568	207	18.04%
Sep-20	10.68	8.99	12.67	10793	9091	12807	876	8.11%
Oct-20	0.06	0.03	0.1	65	30	103	20	29.83%
Nov-20	0.07	0.02	0.13	71	23	131	29	40.27%
Dec-20	0.01	0	0.02	8	0	24	8	97.82%
Jan-21	0.01	0	0.02	9	0	24	8	86.22%
Feb-21	0.19	0.09	0.31	192	95	314	58	30.14%
Apr S01 21	0.43	0.26	0.64	440	264	649	99	22.3%
Apr S02 21	2.88	2.04	3.73	2910	2064	3773	438	15.02%

Table 30: Apportioned density and population estimates of all puffins in the Berwick Bank Development Array only, calculated using design-based analysis

All Puffin	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	1.17	0.77	1.67	1181	781	1685	227	19.15%
May-19	2.01	1.6	2.37	2031	1623	2395	198	9.74%
Jun-19	0.32	0.16	0.5	324	158	504	90	27.72%
Jul-19	2.85	1.93	3.61	2877	1954	3651	436	15.14%
Aug-19	3.43	2.66	4.23	3465	2693	4279	397	11.43%
Sep-19	0.92	0.54	1.51	927	544	1522	267	28.81%
Oct-19	0.25	0.16	0.35	248	165	354	48	19.09%
Nov-19	0.02	0.01	0.04	24	9	43	10	39.06%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0.05	0.02	0.08	46	21	84	16	34.24%
Feb-20	0.17	0.08	0.28	170	83	286	55	31.9%
Mar-20	0.5	0.27	0.72	507	274	733	120	23.7%
May S01 20	1.61	0.97	2.22	1625	979	2245	358	21.98%
May S02 20	0.63	0.45	0.82	640	457	830	99	15.44%
Jun-20	0.73	0.5	0.96	743	502	966	129	17.37%
Jul-20	0.89	0.48	1.5	904	484	1518	272	30.09%
Aug-20	1.59	1.07	2.12	1607	1080	2141	280	17.42%
Sep-20	11.88	9.93	14.06	12008	10035	14211	1084	9.02%
Oct-20	0.12	0.08	0.16	119	80	160	21	17.14%
Nov-20	0.12	0.07	0.19	124	71	189	31	24.95%
Dec-20	0.02	0.01	0.04	26	14	42	8	30.22%
Jan-21	0.02	0.01	0.04	22	11	40	8	37.58%
Feb-21	0.36	0.22	0.51	363	219	513	77	21.18%
Apr S01 21	0.85	0.58	1.15	862	586	1167	147	16.99%
Apr S02 21	4.12	3.02	5.38	4164	3053	5438	607	14.58%

Table 31: Unapportioned density and population estimates of all red-throated divers in the Berwick Bank Development Array only, calculated using design-based analysis

All Red-throated diver	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0.02	0	0.04	17	0	39	11	65.56%
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.01	0	0.02	8	0	24	8	101%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0

All Red-throated diver	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.02	0	0.04	16	0	38	11	63.3%
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0.01	0	0.02	8	0	24	8	92.67%

Table 32: Apportioned density and population estimates of all red-throated divers in the Berwick Bank Development Array only, calculated using design-based analysis

All Red-throated diver	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0.02	0	0.04	20	0	42	11	53.27%
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0.01	0	0.02	8	0	23	7	90.89%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0.01	0	0.02	8	0	24	8	97.37%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.02	0	0.04	16	0	39	10	62.18%
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0

All Red-throated diver	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Apr S02 21	0.01	0	0.02	9	0	24	8	95.51%

Table 33: Unapportioned density and population estimates of all fulmars in the Berwick Bank Development Array only, calculated using design-based analysis

All Fulmar	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.18	0.11	0.26	180	115	267	39	21.66%
May-19	0.05	0.02	0.09	49	16	89	19	38.64%
Jun-19	0.04	0.01	0.08	41	8	84	21	50.05%
Jul-19	0.07	0.03	0.12	66	27	120	25	37.53%
Aug-19	0.06	0.02	0.11	62	23	117	26	41.25%
Sep-19	0.02	0	0.05	17	0	48	16	92.76%
Oct-19	0.03	0.01	0.05	33	13	53	10	29.18%
Nov-19	0.22	0.13	0.34	225	133	344	54	23.81%
Dec-19	0.09	0.03	0.18	89	30	179	42	47.11%
Jan-20	0.17	0.08	0.25	169	85	252	42	24.34%
Feb-20	0.01	0	0.02	8	0	24	8	94.96%
Mar-20	0.03	0.01	0.07	35	9	68	16	45.83%
May S01 20	0.04	0	0.09	39	0	96	26	67.87%
May S02 20	0.01	0	0.04	15	0	38	10	64.52%
Jun-20	0.05	0.02	0.1	49	16	99	22	43.69%
Jul-20	0.07	0.02	0.13	73	24	133	29	39.52%
Aug-20	0.1	0.04	0.17	102	40	171	33	31.91%
Sep-20	0.58	0.37	0.77	583	375	782	103	17.62%
Oct-20	0.34	0.19	0.56	344	191	562	99	28.77%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.26	0.17	0.37	263	170	370	52	19.71%
Jan-21	0.1	0.04	0.19	103	38	191	40	38.27%
Feb-21	0.15	0.07	0.23	156	74	237	42	26.72%
Apr S01 21	0.03	0	0.06	32	4	65	16	50.71%
Apr S02 21	0.19	0.09	0.32	194	92	328	61	31.19%

Table 34: Apportioned density and population estimates of all fulmars in the Berwick Bank Development Array only, calculated using design-based analysis

All Fulmar	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.18	0.11	0.27	185	115	275	43	22.81%
May-19	0.05	0.02	0.09	49	16	88	19	38.5%
Jun-19	0.06	0.01	0.1	60	15	106	23	38.5%

All Fulmar	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Jul-19	0.08	0.04	0.13	86	43	133	24	27.93%
Aug-19	0.07	0.02	0.13	71	23	128	27	36.76%
Sep-19	0.02	0	0.05	25	0	56	17	67.1%
Oct-19	0.04	0.01	0.06	39	15	62	12	29.68%
Nov-19	0.23	0.14	0.34	237	138	343	54	22.65%
Dec-19	0.1	0.03	0.21	105	35	211	47	44.9%
Jan-20	0.2	0.11	0.3	205	114	302	49	23.82%
Feb-20	0.02	0	0.06	24	0	62	16	64.98%
Mar-20	0.03	0.01	0.07	35	9	67	16	43.83%
May S01 20	0.07	0.02	0.16	69	16	159	41	59.18%
May S02 20	0.02	0	0.04	16	0	38	10	59.32%
Jun-20	0.05	0.01	0.09	48	15	92	20	42.04%
Jul-20	0.08	0.03	0.14	78	29	139	30	38.04%
Aug-20	0.1	0.05	0.17	105	46	174	34	31.75%
Sep-20	0.69	0.46	0.94	700	465	946	124	17.62%
Oct-20	0.34	0.2	0.56	348	199	563	100	28.63%
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0.26	0.17	0.37	263	170	370	52	19.71%
Jan-21	0.1	0.04	0.19	103	38	191	40	38.27%
Feb-21	0.15	0.07	0.23	156	74	237	42	26.72%
Apr S01 21	0.03	0	0.06	32	4	65	16	50.71%
Apr S02 21	0.19	0.09	0.32	194	92	328	61	31.19%

Table 35: Unapportioned density and population estimates of all Manx shearwaters in the Berwick Bank Development Array only, calculated using design-based analysis

All Manx shearwater	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0.06	0	0.19	66	0	190	62	93.5%
Sep-20	0	0	0	0	0	0	0	0

All Manx shearwater	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 36: Apportioned density and population estimates of all Manx shearwaters in the Berwick Bank Development Array only, calculated using design-based analysis

All Manx shearwater	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0.01	0	0.02	8	0	24	8	96.24%
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0.01	0	0.05	15	0	47	15	95.29%
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0.06	0	0.19	64	0	190	62	96.04%
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 37: Unapportioned density and population estimates of all gannets in the Berwick Bank Development Array only, calculated using design-based analysis

All Gannet	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.27	0.12	0.45	272	125	452	85	31.21%
May-19	0.73	0.46	1.01	741	467	1018	142	19.16%
Jun-19	1.62	1.22	2.1	1634	1234	2118	227	13.9%
Jul-19	3.58	2.92	4.23	3622	2952	4280	331	9.12%
Aug-19	3.34	2.73	3.89	3381	2762	3935	302	8.93%
Sep-19	2.66	2.15	3.19	2686	2174	3226	281	10.44%
Oct-19	0.79	0.63	0.99	799	635	1004	95	11.82%
Nov-19	0.17	0.1	0.24	169	105	245	39	22.63%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0.01	0	0.02	8	0	24	8	90.82%
Feb-20	0.01	0	0.03	9	0	27	8	94.62%
Mar-20	0.26	0.12	0.43	265	126	430	80	29.96%
May S01 20	0.42	0.2	0.65	425	200	660	122	28.5%
May S02 20	0.81	0.55	1.11	820	556	1118	150	18.22%
Jun-20	1.14	0.81	1.56	1155	818	1575	199	17.24%
Jul-20	3.51	3	4.11	3545	3037	4153	294	8.28%
Aug-20	2.43	1.82	3	2460	1840	3032	312	12.65%
Sep-20	1.43	1.03	1.92	1451	1042	1940	236	16.25%
Oct-20	0.82	0.55	1.07	825	556	1078	134	16.23%
Nov-20	1.22	0.89	1.62	1233	897	1641	191	15.45%
Dec-20	0.2	0.02	0.49	199	20	497	129	64.68%
Jan-21	0.09	0.04	0.15	87	39	148	30	33.71%
Feb-21	0.13	0.02	0.28	128	16	288	73	56.43%
Apr S01 21	0.57	0.44	0.68	573	445	692	67	11.57%
Apr S02 21	1.41	0.42	2.88	1430	422	2913	688	48.08%

Table 38: Apportioned density and population estimates of all gannets in the Berwick Bank Development Array only, calculated using design-based analysis

All Gannet	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0.27	0.13	0.45	276	136	454	85	30.62%
May-19	0.74	0.48	1.08	751	490	1093	159	21.09%
Jun-19	1.62	1.18	2.17	1641	1198	2190	233	14.2%
Jul-19	3.58	2.94	4.21	3624	2967	4257	324	8.93%
Aug-19	3.37	2.83	3.94	3408	2857	3982	291	8.51%
Sep-19	2.65	2.17	3.24	2684	2196	3278	274	10.17%
Oct-19	0.79	0.62	0.96	799	627	971	94	11.73%
Nov-19	0.16	0.1	0.24	166	99	245	40	23.61%
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0.01	0	0.02	8	0	24	8	99.39%
Feb-20	0.01	0	0.02	8	0	24	8	95.9%
Mar-20	0.26	0.12	0.43	264	120	435	83	31.47%

All Gannet	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
May S01 20	0.42	0.22	0.68	421	221	688	122	28.9%
May S02 20	0.81	0.57	1.12	823	573	1136	146	17.69%
Jun-20	1.14	0.82	1.54	1153	828	1560	197	17.01%
Jul-20	3.48	2.92	4.1	3520	2951	4141	313	8.87%
Aug-20	2.44	1.84	3.05	2463	1860	3086	320	12.96%
Sep-20	1.42	1.02	1.9	1435	1036	1919	237	16.48%
Oct-20	0.8	0.57	1.06	814	579	1071	130	15.95%
Nov-20	1.23	0.9	1.62	1239	915	1639	185	14.88%
Dec-20	0.19	0.02	0.46	195	23	469	122	62.83%
Jan-21	0.09	0.03	0.15	87	32	148	32	36.12%
Feb-21	0.12	0.01	0.29	127	16	291	71	55.76%
Apr S01 21	0.57	0.43	0.69	576	438	698	69	11.89%
Apr S02 21	1.41	0.42	2.82	1428	421	2849	651	45.57%

Table 39: Unapportioned density and population estimates of all shags in the Berwick Bank Development Array only, calculated using design-based analysis

All Shag	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

Table 40: Apportioned density and population estimates of all shags in the Berwick Bank Development Array only, calculated using design-based analysis

All Shag	Density Estimate (birds/km ²)	Lower 95% CI (birds/km ²)	Upper 95% CI (birds/km ²)	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
Survey								
Mar-19	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0
May S01 20	0	0	0	0	0	0	0	0
May S02 20	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0
Apr S01 21	0	0	0	0	0	0	0	0
Apr S02 21	0	0	0	0	0	0	0	0

