

# **BERWICK BANK WIND FARM OFFSHORE ENVIRONMENTAL IMPACT ASSESSMENT**

## **APPENDIX 11.1, ANNEX G: DESIGN-BASED ANALYSIS – MONTHLY POPULATION ESTIMATES (BERWICK BANK DEVELOPMENT ARRAY ONLY)**

**Document Status**

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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 all species on a survey-by-survey basis 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 species groups in the Berwick Bank Development array only during Survey 1 on 28 March 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	28.05	17.02	40.63	28352	17207	41075	6202	21.87%
<b>Species group</b>								
Wader species	0.07	0	0.21	66	0	213	65	97.10%
Small gull species	14.95	7.54	23.45	15113	7625	23700	4132	27.34%
Large gull species	0.01	0	0.02	8	0	21	7	87.61%
Gull species	0.01	0	0.03	14	0	36	11	72.52%
Large auk	10.62	7.48	15.04	10732	7564	15202	1928	17.96%
Small auk	0.23	0.11	0.36	234	114	366	67	28.32%
Auk species	1.21	0.84	1.65	1221	847	1670	214	17.46%
Auk / small gull	0.04	0.01	0.08	43	8	79	19	43.81%
Fulmar / gull species	0.38	0.14	0.74	382	141	746	157	40.95%
Gannet species	0.27	0.12	0.45	278	126	451	85	30.29%

**Table 2: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 1 on 28 March 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Golden plover	0.06	0	0.2	64	0	202	62	96.72%
Kittiwake	15.1	7.85	23.42	15262	7933	23671	4087	26.78%
Common gull	0.01	0	0.03	15	0	31	9	58.93%
Herring gull	0.01	0	0.02	8	0	20	7	86.89%
Little auk	0.01	0	0.02	7	0	21	7	94.46%
Guillemot	9.15	6.2	12.35	9254	6266	12484	1541	16.65%
Razorbill	1.2	0.65	1.9	1215	662	1922	348	28.64%
Puffin	0.77	0.48	1.11	782	487	1119	167	21.24%
Fulmar	0.18	0.11	0.26	180	115	267	39	21.66%
Gannet	0.27	0.12	0.45	272	125	452	85	31.21%

**Table 3: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 1 on 28 March 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Golden plover	0.07	0	0.22	67	0	221	64	95.09%
Kittiwake	15.19	8.29	23.38	15358	8377	23629	3977	25.89%
Common gull	0.01	0	0.03	15	0	32	9	61.20%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Herring gull	0.01	0	0.02	8	0	21	7	89.01%
Little auk	0.01	0	0.02	9	2	22	6	71.19%
Guillemot	9.63	6.85	13.17	9732	6924	13313	1645	16.90%
Razorbill	1.29	0.74	1.97	1302	744	1993	327	25.11%
Puffin	1.17	0.77	1.67	1181	781	1685	227	19.15%
Fulmar	0.18	0.11	0.27	185	115	275	43	22.81%
Gannet	0.27	0.13	0.45	276	136	454	85	30.62%

**Table 4: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 2 on 14 May 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	30.63	24.39	37.91	30963	24652	38322	3472	11.21%
<b>Species group</b>								
Small gull species	4.08	2.89	5.37	4127	2922	5431	651	15.77%
Gull species	0.01	0	0.02	9	0	24	8	92.26%
Arctic / common tern	0.04	0	0.12	40	0	119	37	91.73%
Skua species	0.01	0	0.02	8	0	24	8	100.63%
Large auk	23.11	18.05	29.61	23363	18242	29929	3118	13.35%
Small auk	0.76	0.54	1.01	767	545	1024	127	16.53%
Auk species	1.66	1.35	1.96	1676	1362	1983	166	9.85%
Auk / small gull	0.09	0.05	0.13	88	47	136	23	25.82%
Large auk / diver species	0.02	0	0.04	17	0	39	10	58.86%
Auk / shearwater species	0.02	0	0.04	17	0	38	10	60.68%
Diver species	0.01	0	0.02	8	0	24	8	103.07%
Fulmar / gull species	0.05	0.01	0.09	48	16	87	19	39.14%
Gannet species	0.74	0.47	1.03	744	471	1043	146	19.58%

**Table 5: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 2 on 14 May 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	4.09	2.96	5.24	4138	2993	5299	619	14.94%
Great skua	0.01	0	0.02	8	0	24	8	98.89%
Guillemot	22.03	17.25	28.9	22266	17440	29211	3067	13.77%
Razorbill	1.08	0.77	1.45	1097	782	1462	182	16.58%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Puffin	1.61	1.3	1.9	1627	1310	1922	155	9.50%
Red-throated diver	0.02	0	0.04	17	0	39	11	65.56%
Fulmar	0.05	0.02	0.09	49	16	89	19	38.64%
Gannet	0.73	0.46	1.01	741	467	1018	142	19.16%

**Table 6: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 2 on 14 May 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	4.13	2.93	5.57	4176	2958	5632	673	16.10%
Arctic tern	0.04	0	0.12	41	0	119	38	91.66%
Great skua	0.01	0	0.02	9	0	24	8	94.12%
Guillemot	22.85	17.59	29.56	23100	17779	29882	3203	13.86%
Razorbill	1.18	0.87	1.54	1195	885	1555	178	14.85%
Puffin	2.01	1.6	2.37	2031	1623	2395	198	9.74%
Red-throated diver	0.02	0	0.04	20	0	42	11	53.27%
Fulmar	0.05	0.02	0.09	49	16	88	19	38.50%
Gannet	0.74	0.48	1.08	751	490	1093	159	21.09%

**Table 7: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 3 on 21 June 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	11.89	8.83	15.28	12021	8931	15450	1663	13.83%
<b>Species group</b>								
Small gull species	2.52	1.98	3.24	2547	2002	3272	335	13.13%
Black-backed gull species	0.02	0	0.04	17	0	38	10	58.52%
Large gull species	1.1	0.59	1.66	1113	592	1681	291	26.10%
Gull species	0.18	0.02	0.41	182	23	414	105	57.99%
Arctic / common tern	0.07	0.02	0.13	67	16	131	33	48.69%
Tern species	0.01	0	0.02	9	0	24	9	91.10%
Tern / small gull species	0.01	0	0.02	9	0	24	8	90.93%
Skua species excluding great	0.01	0	0.02	9	0	24	8	90.27%
Large auk	5.35	3.35	7.47	5410	3388	7549	1073	19.83%
Small auk	0.06	0.02	0.12	63	16	126	30	47.77%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
Auk species	0.73	0.35	1.22	734	352	1237	234	31.79%
Auk / small gull	0.02	0	0.06	24	0	63	17	70.79%
Fulmar / gull species	0.13	0.07	0.19	129	68	188	32	24.12%
Gannet species	1.61	1.23	2.03	1631	1239	2048	219	13.40%

**Table 8: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 3 on 21 June 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.59	2.07	3.22	2616	2088	3257	307	11.73%
Great black-backed gull	0.01	0	0.02	8	0	24	8	97.42%
Herring gull	1.15	0.57	1.77	1159	578	1795	321	27.66%
Lesser black-backed gull	0.07	0.02	0.11	71	24	116	22	30.62%
Arctic skua	0.01	0	0.02	9	0	24	8	89.39%
Guillemot	5.48	3.65	7.82	5537	3687	7908	1082	19.54%
Razorbill	0.17	0.03	0.36	169	31	362	94	55.40%
Puffin	0.26	0.13	0.45	268	133	456	86	31.95%
Fulmar	0.04	0.01	0.08	41	8	84	21	50.05%
Gannet	1.62	1.22	2.1	1634	1234	2118	227	13.90%

**Table 9: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 3 on 21 June 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.65	2.09	3.35	2681	2113	3382	319	11.88%
Great black-backed gull	0.01	0	0.02	9	1	26	7	77.50%
Herring gull	1.21	0.6	1.86	1221	608	1882	334	27.30%
Lesser black-backed gull	0.08	0.03	0.13	79	35	129	25	31.95%
Arctic tern	0.04	0	0.09	41	0	87	23	55.37%
Arctic skua	0.01	0	0.02	8	0	24	8	94.94%
Guillemot	5.67	3.63	7.86	5736	3670	7950	1097	19.12%
Razorbill	0.18	0.05	0.39	185	53	391	94	50.59%
Puffin	0.32	0.16	0.5	324	158	504	90	27.72%
Fulmar	0.06	0.01	0.1	60	15	106	23	38.50%
Gannet	1.62	1.18	2.17	1641	1198	2190	233	14.20%

**Table 10: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 4 on 23 July 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	40.81	34.25	46.85	41258	34627	47360	3163	7.67%
<b>Species group</b>								
Small gull species	4.95	4.23	5.71	4999	4273	5769	376	7.51%
Black-backed gull species	0.04	0.01	0.07	39	8	73	18	44.43%
Large gull species	0.35	0.24	0.46	353	245	467	57	16.02%
Gull species	0.07	0.03	0.11	67	28	112	23	33.46%
Arctic / common tern	2.16	1.33	2.99	2181	1345	3020	451	20.64%
Tern species	0.01	0	0.04	15	0	37	10	63.56%
Tern / small gull species	0.02	0	0.04	22	3	44	11	48.22%
Skua species	0.01	0	0.02	8	0	23	7	94.56%
Large auk	26.03	21.07	31.14	26315	21295	31482	2639	10.03%
Small auk	0.38	0.19	0.61	386	196	617	111	28.68%
Auk species	2.79	1.98	3.62	2816	2004	3655	418	14.82%
Auk / small gull	0.04	0.01	0.08	44	14	79	18	39.73%
Large auk / diver species	0.01	0	0.02	7	0	20	7	87.06%
Fulmar / gull species	0.11	0.05	0.17	112	55	175	32	28.23%
Gannet species	3.6	2.96	4.22	3638	2989	4265	337	9.26%

**Table 11: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 4 on 23 July 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	4.97	4.22	5.71	5023	4263	5767	380	7.55%
Common gull	0.01	0	0.04	15	0	43	14	93.89%
Herring gull	0.25	0.15	0.37	257	148	376	58	22.41%
Lesser black-backed gull	0.12	0.08	0.16	118	77	161	23	18.81%
Arctic tern	0.14	0.05	0.27	142	55	272	60	41.67%
Great skua	0.01	0	0.02	8	0	24	7	90.80%
Guillemot	22.5	18.4	27.3	22747	18605	27601	2323	10.21%
Razorbill	1.88	1.11	2.79	1900	1118	2822	446	23.46%
Puffin	1.66	1.24	2.08	1683	1255	2102	226	13.38%
Fulmar	0.07	0.03	0.12	66	27	120	25	37.53%
Gannet	3.58	2.92	4.23	3622	2952	4280	331	9.12%

**Table 12: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 4 on 23 July 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	5.02	4.34	5.69	5075	4389	5753	360	7.08%
Common gull	0.01	0	0.04	15	0	42	13	88.13%
Great black-backed gull	0	0	0	1	0	2	1	57.73%
Herring gull	0.3	0.2	0.41	300	199	415	58	19.24%
Lesser black-backed gull	0.12	0.08	0.16	124	80	166	23	18.17%
Common tern	0.07	0.04	0.09	66	45	92	13	18.98%
Arctic tern	1.09	0.71	1.55	1103	716	1566	219	19.85%
Great skua	0.01	0	0.02	9	0	24	8	93.10%
Guillemot	24.44	20.26	29.17	24707	20480	29490	2332	9.44%
Razorbill	2.08	1.31	2.91	2101	1321	2945	428	20.38%
Puffin	2.85	1.93	3.61	2877	1954	3651	436	15.14%
Fulmar	0.08	0.04	0.13	86	43	133	24	27.93%
Gannet	3.58	2.94	4.21	3624	2967	4257	324	8.93%

**Table 13: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 5 on 06 August 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	47.79	35.64	63.69	48310	36023	64383	7315	15.14%
<b>Species group</b>								
Wader species	0.01	0	0.05	15	0	47	15	99.75%
Small gull species	6.84	5.74	7.99	6919	5798	8077	606	8.75%
Large gull species	0.05	0.01	0.08	47	15	82	18	38.15%
Arctic / common tern	5.07	4.03	6.5	5127	4078	6573	634	12.37%
Tern species	0.13	0.02	0.28	137	23	283	66	47.74%
Tern / small gull species	0.07	0.01	0.15	73	15	156	40	54.04%
Large auk	28.11	17.65	40.55	28412	17840	40989	6263	22.04%
Small auk	0.2	0.1	0.32	202	99	322	58	28.71%
Auk species	3.66	2.77	4.44	3702	2803	4490	442	11.92%
Auk / small gull	0.09	0.03	0.17	95	30	171	37	39.23%
Auk / shearwater species	0.01	0	0.02	8	0	24	8	94.07%
Fulmar / gull species	0.08	0.03	0.15	84	31	149	31	36.59%
Gannet species	3.36	2.8	3.95	3395	2834	3996	295	8.69%

**Table 14: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 5 on 06 August 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	6.91	5.83	8.06	6989	5890	8143	585	8.36%
Little gull	0.01	0	0.03	8	0	26	9	101.01%
Herring gull	0.04	0.01	0.08	40	8	78	18	44.11%
Sandwich tern	0.02	0	0.07	25	0	71	22	89.90%
Common tern	0.01	0	0.02	8	0	24	8	91.79%
Arctic tern	0.12	0.05	0.21	122	47	212	45	36.73%
Guillemot	25.9	16.64	39.38	26185	16817	39810	6095	23.28%
Razorbill	1.34	0.82	2.05	1351	830	2073	307	22.70%
Puffin	2.17	1.59	2.68	2196	1605	2707	286	13.02%
Fulmar	0.06	0.02	0.11	62	23	117	26	41.25%
Gannet	3.34	2.73	3.89	3381	2762	3935	302	8.93%

**Table 15: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 5 on 06 August 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Curlew	0.02	0	0.06	17	0	59	17	96.54%
Kittiwake	6.93	5.72	8.22	7004	5783	8307	646	9.21%
Little gull	0.01	0	0.03	8	0	30	9	105.65%
Herring gull	0.05	0.01	0.08	47	15	85	19	38.97%
Sandwich tern	0.06	0.01	0.13	62	7	135	34	54.08%
Common tern	0.21	0.16	0.26	208	166	263	26	12.29%
Arctic tern	2.65	2.08	3.31	2674	2101	3348	328	12.27%
Guillemot	27.34	16.85	40.23	27640	17035	40671	6141	22.22%
Razorbill	1.52	0.98	2.15	1542	992	2177	306	19.81%
Puffin	3.43	2.66	4.23	3465	2693	4279	397	11.43%
Fulmar	0.07	0.02	0.13	71	23	128	27	36.76%
Manx shearwater	0.01	0	0.02	8	0	24	8	96.24%
Gannet	3.37	2.83	3.94	3408	2857	3982	291	8.51%

**Table 16: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 6 on 15 September 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	10.93	9.8	12.19	11046	9903	12318	611	5.53%
<b>Species group</b>								
Wader species	0.03	0	0.09	35	0	96	34	96.81%
Small gull species	2.15	1.45	3.02	2171	1462	3050	408	18.79%
Large auk	4.96	4.06	5.81	5013	4104	5877	436	8.69%
Small auk	0.14	0.05	0.25	144	47	258	56	38.49%
Auk species	0.91	0.45	1.57	917	459	1583	297	32.31%
Auk / small gull	0.02	0	0.04	16	0	38	11	63.16%
Fulmar / gull species	0.02	0	0.06	25	0	63	17	67.71%
Gannet species	2.66	2.15	3.22	2688	2175	3255	285	10.60%
Small bird species	0.01	0	0.02	9	0	24	8	95.47%

**Table 17: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 6 on 15 September 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Golden plover	0.03	0	0.09	32	0	96	32	97.59%
Kittiwake	2.18	1.52	3	2208	1538	3035	391	17.70%
Guillemot	3.02	2.36	3.72	3053	2388	3763	343	11.21%
Razorbill	1.04	0.69	1.41	1049	703	1423	197	18.77%
Puffin	0.6	0.22	1.13	603	226	1140	247	40.99%
Fulmar	0.02	0	0.05	17	0	48	16	92.76%
Gannet	2.66	2.15	3.19	2686	2174	3226	281	10.44%

**Table 18: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 6 on 15 September 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Golden plover	0.03	0	0.09	31	0	95	30	97.06%
Kittiwake	2.15	1.45	2.98	2173	1466	3016	410	18.85%
Little gull	0	0	0	1	0	1	1	87.67%
Guillemot	3.86	3.14	4.61	3906	3174	4663	402	10.28%
Razorbill	1.22	0.88	1.64	1236	890	1657	198	16.01%
Puffin	0.92	0.54	1.51	927	544	1522	267	28.81%
Fulmar	0.02	0	0.05	25	0	56	17	67.10%
Gannet	2.65	2.17	3.24	2684	2196	3278	274	10.17%



**Table 19: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 7 on 17 October 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	4.02	2.87	5.65	4059	2903	5707	683	16.82%
<b>Species group</b>								
Duck species	0.01	0	0.04	12	0	37	12	97.55%
Small gull species	0.57	0.43	0.72	581	431	723	77	13.27%
Gull species	0.02	0	0.03	17	6	31	8	44.19%
Large auk	1.96	1.07	3.2	1984	1085	3239	574	28.93%
Small auk	0.03	0	0.08	35	5	85	22	61.03%
Auk species	0.47	0.32	0.63	473	322	638	81	17.11%
Auk / small gull	0.05	0.02	0.08	47	21	79	16	33.08%
Fulmar / gull species	0.04	0.02	0.06	38	17	60	12	30.20%
Gannet species	0.79	0.63	0.98	797	636	995	94	11.75%
Passerine species	0.01	0	0.04	11	0	39	12	105.83%
Small bird species	0.05	0	0.14	52	0	141	40	75.70%

**Table 20: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 7 on 17 October 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Teal	0.01	0	0.04	12	0	37	11	92.72%
Kittiwake	0.58	0.45	0.74	592	452	749	78	13.17%
Guillemot	1.35	0.71	2.28	1367	721	2304	410	29.96%
Razorbill	0.51	0.24	0.82	519	241	832	148	28.52%
Puffin	0.15	0.08	0.23	153	77	236	41	26.76%
Fulmar	0.03	0.01	0.05	33	13	53	10	29.18%
Gannet	0.79	0.63	0.99	799	635	1004	95	11.82%

**Table 21: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 7 on 17 October 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Teal	0.01	0	0.04	13	0	44	12	97.55%
Kittiwake	0.62	0.46	0.78	625	467	794	83	13.18%
Black-headed gull	0	0	0	1	0	1	1	92.97%
Common gull	0	0	0	1	0	1	1	92.59%
Little auk	0	0	0	3	2	4	1	15.66%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Guillemot	1.52	0.85	2.51	1542	860	2537	422	27.38%
Razorbill	0.71	0.41	1.06	718	418	1076	174	24.15%
Puffin	0.25	0.16	0.35	248	165	354	48	19.09%
Fulmar	0.04	0.01	0.06	39	15	62	12	29.68%
Gannet	0.79	0.62	0.96	799	627	971	94	11.73%
Redwing	0.01	0	0.04	12	0	37	11	92.04%

**Table 22: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 8 on 19 November 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	1.88	1.42	2.34	1897	1440	2370	234	12.30%
<b>Species group</b>								
Small gull species	0.35	0.19	0.5	351	195	509	82	23.08%
Black-backed gull species	0.01	0	0.04	15	0	46	14	90.08%
Large gull species	0.11	0.01	0.29	114	12	297	84	73.84%
Gull species	0.07	0	0.19	74	0	194	56	74.63%
Large auk	0.8	0.58	1.01	807	590	1021	111	13.76%
Small auk	0.01	0	0.02	8	0	24	8	89.75%
Auk species	0.09	0.03	0.18	92	30	178	39	42.04%
Auk / small gull	0.02	0	0.04	17	0	40	12	68.27%
Diver species	0.01	0	0.02	8	0	24	8	90.88%
Fulmar / gull species	0.23	0.13	0.36	233	130	362	57	24.43%
Gannet species	0.17	0.1	0.25	171	101	253	39	22.54%

**Table 23: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 8 on 19 November 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	0.27	0.15	0.41	272	153	414	67	24.38%
Little gull	0.01	0	0.02	7	0	22	7	104.32%
Common gull	0.07	0.01	0.15	67	15	151	38	56.48%
Great black-backed gull	0.08	0	0.25	85	0	248	78	91.36%
Herring gull	0.05	0.01	0.09	48	15	96	23	48.40%
Little auk	0.02	0	0.04	16	0	38	10	61.20%
Guillemot	0.63	0.46	0.84	639	466	854	101	15.67%
Razorbill	0.08	0.04	0.13	86	38	131	24	27.36%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Red-throated diver	0.01	0	0.02	8	0	24	8	101%
Fulmar	0.22	0.13	0.34	225	133	344	54	23.81%
Gannet	0.17	0.1	0.24	169	105	245	39	22.63%

**Table 24: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 8 on 19 November 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	0.29	0.18	0.41	295	178	415	65	22.03%
Black-headed gull	0	0	0	1	0	1	1	62.25%
Little gull	0.01	0	0.03	8	0	28	8	99.50%
Common gull	0.09	0.01	0.17	90	16	173	43	47.42%
Great black-backed gull	0.09	0	0.25	87	0	253	81	92.66%
Herring gull	0.09	0.01	0.24	96	14	239	64	66.29%
Little auk	0.02	0	0.05	24	4	48	12	49.79%
Guillemot	0.75	0.55	0.94	755	560	956	110	14.45%
Razorbill	0.12	0.07	0.17	119	72	171	26	21.19%
Puffin	0.02	0.01	0.04	24	9	43	10	39.06%
Red-throated diver	0.01	0	0.02	8	0	23	7	90.89%
Fulmar	0.23	0.14	0.34	237	138	343	54	22.65%
Gannet	0.16	0.1	0.24	166	99	245	40	23.61%

**Table 25: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 9 on 07 December 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	2.21	1.56	2.99	2230	1574	3020	400	17.94%
<b>Species group</b>								
Small gull species	0.28	0.14	0.49	283	147	495	97	34.05%
Large gull species	0.01	0	0.03	14	0	35	9	65.91%
Large auk	1.63	1.01	2.17	1649	1019	2196	308	18.64%
Auk species	0.14	0.05	0.28	137	47	280	61	43.92%
Auk / small gull	0.03	0.01	0.06	28	6	58	15	53.28%
Fulmar / gull species	0.1	0.03	0.21	105	35	211	48	45.63%

**Table 26: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 9 on 07 December 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	0.27	0.13	0.5	277	135	508	97	35.12%
Great black-backed gull	0.01	0	0.02	7	0	22	7	95.86%
Herring gull	0.01	0	0.02	7	0	21	7	98.33%
Little auk	0.01	0	0.02	7	0	21	7	92.63%
Guillemot	1.25	0.76	1.76	1264	769	1778	261	20.65%
Razorbill	0.27	0.12	0.43	271	124	440	82	29.96%
Fulmar	0.09	0.03	0.18	89	30	179	42	47.11%

**Table 27: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 9 on 07 December 2019**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	0.28	0.15	0.49	288	156	491	90	31.05%
Common gull	0	0	0	2	0	4	2	96.92%
Great black-backed gull	0.01	0	0.02	7	0	21	7	92.91%
Herring gull	0.01	0	0.02	7	0	21	6	84.07%
Little auk	0.01	0	0.03	15	2	31	9	56.89%
Guillemot	1.38	0.93	1.85	1397	940	1871	242	17.28%
Razorbill	0.38	0.18	0.64	388	187	643	120	30.95%
Fulmar	0.1	0.03	0.21	105	35	211	47	44.90%

**Table 28: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 10 on 05 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	13.93	9.66	19.04	14082	9770	19250	2512	17.84%
<b>Species group</b>								
Small gull species	2.16	1.11	3.51	2185	1119	3547	641	29.34%
Large gull species	0.01	0	0.03	9	0	28	9	94.10%
Gull species	0.02	0	0.04	18	0	38	11	59.18%
Large auk	10.9	7.34	15.59	11022	7421	15760	2167	19.66%
Small auk	0.06	0.01	0.17	65	7	169	45	68.84%
Auk species	0.79	0.48	1.2	803	489	1214	182	22.56%
Auk / small gull	0.01	0	0.03	9	0	28	9	98.02%
Large auk / diver species	0.01	0	0.02	8	0	23	7	86.64%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
Diver species	0.01	0	0.03	9	0	28	9	95.97%
Fulmar / gull species	0.21	0.12	0.3	208	118	302	48	23.03%
Gannet species	0.01	0	0.03	8	0	27	8	93.73%

**Table 29: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 10 on 05 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.1	1.14	3.4	2127	1156	3441	592	27.82%
Herring gull	0.01	0	0.03	9	0	28	8	92.66%
Little auk	0.05	0.01	0.1	52	9	104	24	45.47%
Guillemot	8.88	5.86	12.75	8979	5924	12893	1852	20.62%
Razorbill	1.05	0.53	1.61	1064	540	1625	272	25.51%
Puffin	0.02	0	0.04	17	0	40	11	60.82%
Fulmar	0.17	0.08	0.25	169	85	252	42	24.34%
Gannet	0.01	0	0.02	8	0	24	8	90.82%

**Table 30: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 10 on 05 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.19	1.11	3.59	2215	1125	3632	642	28.98%
Little gull	0	0	0	1	0	1	1	93.40%
Common gull	0	0	0	1	0	1	1	89.26%
Herring gull	0.01	0	0.03	14	1	34	9	63.07%
Little auk	0.11	0.04	0.19	110	44	196	39	35.07%
Guillemot	9.86	6.91	14.12	9963	6985	14271	1794	18.01%
Razorbill	1.47	0.91	2.12	1486	924	2139	306	20.55%
Puffin	0.05	0.02	0.08	46	21	84	16	34.24%
Fulmar	0.2	0.11	0.3	205	114	302	49	23.82%
Gannet	0.01	0	0.02	8	0	24	8	99.39%

**Table 31: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 11 on 19 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	10.43	7.11	14.31	10548	7184	14465	1828	17.33%
<b>Species group</b>								
Small gull species	1.88	1.05	2.99	1904	1058	3028	506	26.53%
Large auk	8.26	5.66	11.13	8346	5723	11250	1446	17.32%
Small auk	0.02	0	0.04	17	0	39	10	58.30%
Auk species	0.29	0.14	0.48	296	147	491	91	30.49%
Auk / small gull	0.08	0.02	0.14	79	24	142	31	38.44%
Fulmar / gull species	0.03	0	0.06	26	0	60	16	61.45%
Gannet species	0.01	0	0.02	8	0	24	8	91.33%

**Table 32: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 11 on 19 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.83	0.91	3.03	1845	920	3064	518	28.05%
Little gull	0.02	0	0.06	25	0	64	18	72%
Common gull	0.04	0	0.08	41	0	84	21	50.83%
Little auk	0.01	0	0.02	8	0	24	8	97.90%
Guillemot	6.51	4.17	8.74	6576	4221	8831	1160	17.63%
Razorbill	0.9	0.59	1.32	911	600	1334	191	20.93%
Puffin	0.03	0	0.07	32	0	71	17	53.57%
Fulmar	0.01	0	0.02	8	0	24	8	94.96%
Gannet	0.01	0	0.03	9	0	27	8	94.62%

**Table 33: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 11 on 19 February 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.91	0.97	3.08	1929	977	3116	557	28.86%
Little gull	0.02	0	0.06	24	0	64	18	72.78%
Common gull	0.04	0	0.08	41	0	83	21	50.25%
Little auk	0.06	0.03	0.1	64	31	105	19	29.26%
Guillemot	7.35	4.91	9.67	7432	4964	9779	1288	17.32%
Razorbill	0.99	0.67	1.41	1002	679	1421	200	19.94%
Puffin	0.17	0.08	0.28	170	83	286	55	31.90%
Fulmar	0.02	0	0.06	24	0	62	16	64.98%
Gannet	0.01	0	0.02	8	0	24	8	95.90%

**Table 34: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 12 on 21 March 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	36.62	27.69	45.6	37014	27995	46092	4794	12.95%
<b>Species group</b>								
Small gull species	5.54	4.08	6.98	5602	4129	7061	770	13.74%
Skua species	0.01	0	0.03	10	0	27	9	85.63%
Large auk	29.85	21.53	37.71	30175	21765	38117	4186	13.87%
Small auk	0.14	0.03	0.29	142	27	290	71	50%
Auk species	0.58	0.36	0.81	587	366	822	120	20.29%
Auk / small gull	0.05	0.01	0.1	47	9	99	26	55.27%
Large auk / diver species	0.01	0	0.03	10	0	27	9	89.14%
Fulmar / gull species	0.03	0.01	0.07	35	9	68	16	45.46%
Gannet species	0.26	0.13	0.45	265	131	455	85	31.97%

**Table 35: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 12 on 21 March 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	5.51	4	6.89	5566	4039	6966	747	13.41%
Great skua	0.01	0	0.03	10	0	30	9	88.07%
Guillemot	22.21	15.04	28.76	22456	15201	29071	3494	15.56%
Razorbill	4.94	3.33	6.43	4996	3365	6503	784	15.69%
Puffin	0.27	0.13	0.44	272	128	446	79	29.01%
Fulmar	0.03	0.01	0.07	35	9	68	16	45.83%
Gannet	0.26	0.12	0.43	265	126	430	80	29.96%

**Table 36: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 12 on 21 March 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	5.59	4	7.1	5648	4046	7179	796	14.09%
Common gull	0	0	0	1	1	1	1	44.88%
Great skua	0.01	0	0.03	9	0	27	9	93.48%
Guillemot	24.67	17.1	31.59	24942	17288	31935	3734	14.97%
Razorbill	5.33	3.79	7	5385	3827	7072	843	15.64%
Puffin	0.5	0.27	0.72	507	274	733	120	23.70%
Fulmar	0.03	0.01	0.07	35	9	67	16	43.83%
Gannet	0.26	0.12	0.43	264	120	435	83	31.47%

**Table 37: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 13 on 05 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	25.56	17.19	34.46	25836	17381	34836	4571	17.69%
<b>Species group</b>								
Small gull species	5.62	2.38	9.28	5680	2401	9378	1865	32.82%
Gull species	0.31	0.01	0.85	310	10	860	247	79.58%
Arctic / common tern	0.04	0.01	0.08	38	8	79	19	49.48%
Large auk	17.49	10.55	24.53	17677	10662	24793	3665	20.73%
Small auk	0.04	0	0.1	46	0	106	28	60.36%
Auk species	1.64	0.97	2.36	1654	976	2388	362	21.88%
Auk / small gull	0.31	0.09	0.55	316	88	556	124	39.14%
Fulmar / gull species	0.16	0.03	0.37	162	29	371	95	58.42%
Gannet species	0.42	0.21	0.67	421	215	680	122	28.87%

**Table 38: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 13 on 05 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	6.15	2.65	10.38	6215	2677	10495	1968	31.67%
Common tern	0.01	0	0.03	9	0	30	9	99.71%
Guillemot	15.87	9.92	22.55	16044	10030	22790	3284	20.47%
Razorbill	0.72	0.43	1.06	725	430	1074	170	23.38%
Puffin	0.62	0.34	0.9	624	344	909	151	24.14%
Fulmar	0.04	0	0.09	39	0	96	26	67.87%
Gannet	0.42	0.2	0.65	425	200	660	122	28.50%

**Table 39: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 13 on 05 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	6.53	2.37	11.29	6601	2399	11410	2208	33.45%
Lesser black-backed gull	0	0	0	1	0	1	1	87.88%
Common tern	0.02	0	0.04	20	3	41	11	53.13%
Arctic tern	0.02	0	0.04	19	0	45	13	65.61%
Guillemot	16.83	10.62	23.94	17011	10734	24199	3466	20.37%
Razorbill	0.79	0.43	1.16	801	438	1177	188	23.37%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Puffin	1.61	0.97	2.22	1625	979	2245	358	21.98%
Fulmar	0.07	0.02	0.16	69	16	159	41	59.18%
Gannet	0.42	0.22	0.68	421	221	688	122	28.90%

**Table 40: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 14 on 16 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	26.23	18.78	34.86	26518	18983	35235	4420	16.67%
<b>Species group</b>								
Wader species	0.11	0	0.33	110	0	331	104	94.63%
Small gull species	8.36	5.82	11	8449	5883	11122	1356	16.04%
Arctic / common tern	0.08	0.02	0.14	79	24	144	30	37.93%
Large auk	15.94	10.44	22.23	16109	10553	22476	2971	18.44%
Small auk	0.07	0.03	0.13	73	31	131	25	34.19%
Auk species	0.65	0.47	0.85	655	471	861	99	15.10%
Auk / small gull	0.08	0.03	0.13	81	35	133	26	31.43%
Fulmar / gull species	0.02	0	0.04	17	0	39	10	59.84%
Gannet species	0.81	0.55	1.13	821	561	1144	148	17.95%

**Table 41: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 14 on 16 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	8.35	6.23	10.71	8439	6299	10823	1242	14.71%
Common tern	0.01	0	0.02	9	0	24	8	89.32%
Guillemot	14.97	9.73	20.85	15134	9831	21073	2853	18.85%
Razorbill	0.4	0.17	0.69	403	172	694	141	34.88%
Puffin	0.35	0.24	0.44	350	243	449	54	15.28%
Fulmar	0.01	0	0.04	15	0	38	10	64.52%
Gannet	0.81	0.55	1.11	820	556	1118	150	18.22%

**Table 42: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 14 on 16 May 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	8.41	6.19	10.81	8498	6258	10925	1273	14.98%
Common tern	0.01	0	0.03	15	3	34	9	61.11%
Arctic tern	0.07	0.02	0.12	67	21	126	28	40.62%
Guillemot	15.7	10.38	21.73	15873	10497	21964	3010	18.96%
Razorbill	0.47	0.23	0.8	476	236	808	145	30.40%
Puffin	0.63	0.45	0.82	640	457	830	99	15.44%
Fulmar	0.02	0	0.04	16	0	38	10	59.32%
Gannet	0.81	0.57	1.12	823	573	1136	146	17.69%

**Table 43: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 15 on 09 June 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	47.69	37.8	57.07	48209	38207	57688	5076	10.53%
<b>Species group</b>								
Small gull species	8.88	7.38	10.37	8981	7464	10480	815	9.07%
Black-backed gull species	0.01	0	0.02	9	0	24	8	94.51%
Arctic / common tern	0.03	0	0.08	32	0	78	21	64.23%
Skua species	0.01	0	0.03	9	0	27	8	95.97%
Large auk	36.81	29.28	46.28	37215	29594	46784	4273	11.48%
Small auk	0.01	0	0.02	8	0	24	8	98.72%
Auk species	0.83	0.6	1.05	838	602	1060	122	14.54%
Auk / small gull	0.1	0.05	0.17	106	48	168	32	29.59%
Auk / shearwater species	0.02	0	0.05	16	0	47	16	100.67%
Fulmar / gull species	0.05	0.01	0.1	49	15	98	22	43.65%
Gannet species	1.11	0.76	1.48	1126	766	1500	199	17.60%

**Table 44: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 15 on 09 June 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	9.01	7.42	10.52	9108	7496	10631	809	8.88%
Lesser black-backed gull	0.01	0	0.02	8	0	24	7	96.21%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Arctic tern	0.02	0	0.06	24	0	62	17	70.20%
Great skua	0.01	0	0.02	9	0	24	8	91.30%
Guillemot	35.6	27.82	43.36	35986	28124	43832	3992	11.09%
Razorbill	0.8	0.56	1.12	813	569	1129	148	18.15%
Puffin	0.42	0.25	0.59	422	258	597	89	21.04%
Fulmar	0.05	0.02	0.1	49	16	99	22	43.69%
Gannet	1.14	0.81	1.56	1155	818	1575	199	17.24%

**Table 45: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 15 on 09 June 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	9.06	7.45	10.72	9159	7534	10841	884	9.65%
Lesser black-backed gull	0.01	0	0.02	8	0	24	8	103.56%
Arctic tern	0.03	0	0.08	32	0	77	21	64.46%
Great skua	0.01	0	0.02	9	0	24	8	91.99%
Guillemot	35.91	28.51	43.65	36300	28822	44124	4080	11.24%
Razorbill	0.85	0.56	1.14	860	568	1153	154	17.88%
Puffin	0.73	0.5	0.96	743	502	966	129	17.37%
Fulmar	0.05	0.01	0.09	48	15	92	20	42.04%
Manx shearwater	0.01	0	0.05	15	0	47	15	95.29%
Gannet	1.14	0.82	1.54	1153	828	1560	197	17.01%

**Table 46: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 16 on 12 July 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	26.7	22.57	30.84	26994	22813	31170	2194	8.13%
<b>Species group</b>								
Small gull species	8.7	6.87	10.7	8795	6944	10816	987	11.22%
Black-backed gull species	0.16	0.11	0.21	161	109	217	27	16.45%
Large gull species	2.24	1.37	3.35	2266	1388	3387	538	23.74%
Gull species	0.48	0.15	0.86	481	154	866	186	38.62%
Arctic / common tern	0.14	0.02	0.3	145	24	308	75	51.88%
Large auk	9.89	7.37	12.39	9995	7449	12526	1243	12.43%
Small auk	0.23	0.06	0.43	234	62	438	100	42.48%
Auk species	1.03	0.66	1.46	1040	667	1472	215	20.64%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
Auk / small gull	0.04	0.01	0.08	41	8	78	18	43.86%
Auk / shearwater species	0.06	0	0.19	62	0	189	59	96.27%
Fulmar / gull species	0.12	0.06	0.19	126	62	192	34	26.23%
Gannet species	3.49	2.99	4.11	3530	3022	4152	290	8.21%

**Table 47: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 16 on 12 July 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	8.72	6.85	10.75	8812	6924	10866	1011	11.46%
Little gull	0.01	0	0.03	9	0	31	9	101.76%
Great black-backed gull	0.02	0	0.04	16	0	39	10	63.10%
Herring gull	2.31	1.4	3.42	2340	1418	3461	539	23.03%
Lesser black-backed gull	0.47	0.34	0.63	471	348	639	75	15.86%
Common tern	0.05	0	0.14	50	0	144	48	96.71%
Arctic tern	0.03	0	0.09	32	0	96	32	100.70%
Guillemot	8.21	6.48	9.97	8300	6554	10082	915	11.01%
Razorbill	1.36	0.77	2.1	1376	776	2122	370	26.83%
Puffin	0.66	0.32	1.16	664	319	1175	235	35.34%
Fulmar	0.07	0.02	0.13	73	24	133	29	39.52%
Gannet	3.51	3	4.11	3545	3037	4153	294	8.28%

**Table 48: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 16 on 12 July 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	8.69	6.95	10.84	8785	7022	10958	1054	11.99%
Little gull	0.01	0	0.02	9	0	24	8	96.80%
Common gull	0	0	0	1	0	1	1	89.09%
Great black-backed gull	0.02	0	0.04	19	2	41	11	55.21%
Herring gull	2.39	1.5	3.45	2419	1517	3487	534	22.05%
Lesser black-backed gull	0.48	0.35	0.65	484	350	657	79	16.16%
Common tern	0.07	0.01	0.19	71	7	189	54	76.23%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Arctic tern	0.06	0.01	0.15	63	13	154	38	59%
Guillemot	8.89	6.94	11.03	8983	7020	11155	1083	12.06%
Razorbill	1.5	0.8	2.4	1517	812	2427	423	27.89%
Puffin	0.89	0.48	1.5	904	484	1518	272	30.09%
Fulmar	0.08	0.03	0.14	78	29	139	30	38.04%
Gannet	3.48	2.92	4.1	3520	2951	4141	313	8.87%

**Table 49: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 17 on 09 August 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	47.66	40.96	55.15	48181	41406	55752	3761	7.80%
<b>Species group</b>								
Small gull species	13.45	9.27	17.79	13596	9375	17983	2105	15.48%
Large gull species	0.06	0.02	0.09	57	24	89	17	29.26%
Gull species	0.06	0.02	0.12	64	16	126	29	44.52%
Arctic / common tern	2.87	1.47	4.54	2899	1483	4590	816	28.15%
Tern species	0.09	0.02	0.19	89	16	194	46	50.78%
Tern / small gull species	0.09	0.02	0.15	89	23	155	35	38.68%
Large auk	26.06	22.97	29.52	26343	23224	29840	1758	6.67%
Small auk	0.43	0.26	0.62	436	266	623	92	21.11%
Auk species	1.71	1.17	2.33	1733	1187	2356	305	17.56%
Auk / small gull	0.07	0.02	0.15	73	16	149	36	49.56%
Auk / shearwater species	0.1	0	0.28	105	0	281	74	70.47%
Diver species	0.01	0	0.03	8	0	28	9	104.87%
Fulmar / gull species	0.1	0.05	0.17	104	47	172	32	30.86%
Gannet species	2.46	1.82	3.05	2487	1839	3088	310	12.43%

**Table 50: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 17 on 09 August 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	13.26	9.58	17.28	13405	9683	17464	2015	15.03%
Little gull	0.07	0	0.18	72	0	187	52	71.81%
Common gull	0.03	0	0.08	32	0	77	20	62.02%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Herring gull	0.06	0.02	0.09	57	16	95	21	35.89%
Lesser black-backed gull	0.01	0	0.02	9	0	24	7	85.52%
Common tern	0.02	0	0.04	17	0	39	11	64.83%
Arctic tern	0.04	0	0.08	39	0	80	21	52.16%
Guillemot	22.75	19.67	25.51	22993	19884	25788	1569	6.82%
Razorbill	2.72	1.87	3.65	2751	1894	3689	464	16.87%
Puffin	1.13	0.76	1.55	1146	771	1568	207	18.04%
Fulmar	0.1	0.04	0.17	102	40	171	33	31.91%
Manx shearwater	0.06	0	0.19	66	0	190	62	93.50%
Gannet	2.43	1.82	3	2460	1840	3032	312	12.65%

**Table 51: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 17 on 09 August 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	13.32	9.56	17.38	13464	9666	17568	2033	15.10%
Little gull	0.12	0.03	0.24	124	32	241	53	42.09%
Common gull	0.03	0	0.08	33	1	79	21	62.42%
Great black-backed gull	0	0	0	1	0	1	1	92.28%
Herring gull	0.09	0.04	0.13	88	42	136	26	28.60%
Lesser black-backed gull	0.01	0	0.03	11	1	27	7	63.73%
Sandwich tern	0.03	0	0.05	27	3	55	14	53.52%
Common tern	2.37	1.05	3.88	2395	1062	3925	753	31.44%
Arctic tern	0.53	0.29	0.79	537	297	801	138	25.58%
Guillemot	23.69	20.78	26.4	23949	21004	26683	1556	6.49%
Razorbill	2.9	2.06	3.89	2935	2078	3930	483	16.43%
Puffin	1.59	1.07	2.12	1607	1080	2141	280	17.42%
Fulmar	0.1	0.05	0.17	105	46	174	34	31.75%
Manx shearwater	0.06	0	0.19	64	0	190	62	96.04%
Gannet	2.44	1.84	3.05	2463	1860	3086	320	12.96%

**Table 52: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 18 on 06 September 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	66.39	49.85	84.16	67114	50395	85077	8761	13.05%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
<b>Species group</b>								
Small gull species	15.63	10.36	21.03	15803	10473	21262	3071	19.43%
Large gull species	0.04	0	0.1	41	0	100	27	65.19%
Gull species	0.06	0.01	0.11	58	8	112	27	45.29%
Arctic / common tern	0.07	0	0.2	71	0	200	61	84.99%
Large auk	33.74	25.14	43.78	34110	25412	44257	4672	13.70%
Small auk	1.61	0.69	2.85	1629	693	2882	577	35.38%
Auk species	12.44	9.99	15.56	12571	10099	15730	1342	10.68%
Auk / small gull	0.3	0.11	0.53	300	109	536	116	38.38%
Auk / shearwater species	0.02	0	0.05	17	0	48	16	91.03%
Fulmar / gull species	0.7	0.45	0.92	710	454	931	122	17.18%
Gannet species	1.39	0.96	1.85	1402	967	1871	239	17.01%

**Table 53: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 18 on 06 September 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	15.94	10.73	22.73	16112	10844	22981	3180	19.73%
Common gull	0.01	0	0.02	8	0	24	8	104.11%
Herring gull	0.06	0.02	0.1	57	23	104	22	37.37%
Arctic tern	0.01	0	0.03	9	0	31	9	98.89%
Guillemot	25.67	18.79	32.91	25948	18995	33266	3643	14.04%
Razorbill	8.11	5.61	11.12	8201	5670	11244	1486	18.12%
Puffin	10.68	8.99	12.67	10793	9091	12807	876	8.11%
Fulmar	0.58	0.37	0.77	583	375	782	103	17.62%
Gannet	1.43	1.03	1.92	1451	1042	1940	236	16.25%

**Table 54: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 18 on 06 September 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	16.11	10.67	22.37	16282	10789	22614	3135	19.25%
Common gull	0.01	0	0.02	8	0	24	8	97.55%
Herring gull	0.06	0.02	0.12	65	18	122	27	41.31%
Lesser black-backed gull	0	0	0	1	0	2	1	93.40%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Common tern	0.06	0	0.15	57	0	157	49	85.65%
Arctic tern	0.02	0	0.05	20	0	49	13	65.95%
Guillemot	26.96	20.3	35.08	27249	20524	35466	3683	13.51%
Razorbill	8.97	5.9	12.61	9072	5965	12745	1698	18.71%
Puffin	11.88	9.93	14.06	12008	10035	14211	1084	9.02%
Fulmar	0.69	0.46	0.94	700	465	946	124	17.62%
Gannet	1.42	1.02	1.9	1435	1036	1919	237	16.48%

**Table 55: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 19 on 16 October 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	5.98	4.78	7.23	6046	4829	7307	628	10.38%
<b>Species group</b>								
Small gull species	1.48	0.9	2.16	1500	914	2183	339	22.55%
Large gull species	0.01	0	0.02	8	0	24	8	97.91%
Skua species	0.01	0	0.02	8	0	24	8	96.55%
Large auk	2.65	1.82	3.51	2679	1839	3551	437	16.28%
Small auk	0.01	0	0.02	9	0	24	8	95.47%
Auk species	0.59	0.38	0.85	595	388	863	119	19.87%
Auk / small gull	0.01	0	0.02	8	0	24	8	93.65%
Diver species	0.01	0	0.02	9	0	24	8	91.53%
Fulmar / gull species	0.34	0.19	0.56	349	192	571	102	29.13%
Gannet species	0.81	0.56	1.08	819	562	1093	135	16.41%

**Table 56: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 19 on 16 October 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.46	0.92	2.13	1475	930	2150	325	21.99%
Herring gull	0.01	0	0.02	8	0	24	8	101.64%
Great skua	0.01	0	0.02	8	0	24	8	98.37%
Guillemot	2.18	1.6	2.8	2206	1614	2835	313	14.15%
Razorbill	0.56	0.25	0.97	568	251	984	190	33.43%
Puffin	0.06	0.03	0.1	65	30	103	20	29.83%
Fulmar	0.34	0.19	0.56	344	191	562	99	28.77%
Gannet	0.82	0.55	1.07	825	556	1078	134	16.23%



**Table 57: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 19 on 16 October 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.49	0.88	2.23	1508	885	2255	361	23.89%
Little gull	0	0	0	1	0	1	1	94.05%
Common gull	0	0	0	1	0	1	1	88.71%
Herring gull	0.01	0	0.02	9	0	24	8	95.10%
Great skua	0.01	0	0.02	8	0	24	8	95.97%
Guillemot	2.38	1.81	3.1	2408	1831	3129	338	14.01%
Razorbill	0.76	0.41	1.15	765	411	1166	191	24.88%
Puffin	0.12	0.08	0.16	119	80	160	21	17.14%
Red-throated diver	0.01	0	0.02	8	0	24	8	97.37%
Fulmar	0.34	0.2	0.56	348	199	563	100	28.63%
Gannet	0.8	0.57	1.06	814	579	1071	130	15.95%

**Table 58: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 20 on 05 November 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	8.25	5.83	10.58	8344	5892	10697	1267	15.18%
<b>Species group</b>								
Duck species	0.01	0	0.02	8	0	24	8	98.74%
Small gull species	4.65	2.77	7.06	4705	2801	7140	1074	22.81%
Gull species	0.02	0	0.04	16	0	39	11	66.54%
Skua species	0.03	0	0.07	32	0	73	19	59.98%
Skua species excluding great	0.02	0	0.04	16	0	39	11	66.27%
Large auk	1.66	1.22	2.26	1674	1231	2289	272	16.23%
Small auk	0.02	0	0.05	24	0	48	13	50.67%
Auk species	0.44	0.25	0.66	446	252	665	108	24.09%
Auk / small gull	0.07	0.02	0.13	70	16	131	30	42.32%
Gannet species	1.23	0.86	1.64	1247	868	1659	200	16.01%

**Table 59: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 20 on 05 November 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Goosander	0.01	0	0.03	9	0	31	9	96.75%
Kittiwake	4.73	2.8	6.98	4787	2834	7052	1091	22.79%
Great skua	0.02	0	0.05	24	4	51	13	53.07%
Pomarine skua	0.01	0	0.03	9	0	31	9	102.09%
Arctic skua	0.01	0	0.02	9	0	24	8	93.03%
Little auk	0.02	0	0.06	25	0	64	18	72.33%
Guillemot	1.6	1.18	2.12	1621	1192	2143	255	15.68%
Razorbill	0.2	0.09	0.31	198	88	316	60	30.03%
Puffin	0.07	0.02	0.13	71	23	131	29	40.27%
Gannet	1.22	0.89	1.62	1233	897	1641	191	15.45%

**Table 60: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 20 on 05 November 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Goosander	0.01	0	0.02	9	0	24	8	87.80%
Kittiwake	4.84	2.72	7.03	4888	2749	7106	1174	24.01%
Great skua	0.03	0	0.07	32	0	73	18	55.50%
Pomarine skua	0.01	0	0.02	8	0	24	8	98.47%
Arctic skua	0.01	0	0.03	8	0	27	8	100.01%
Little auk	0.03	0.01	0.07	35	8	72	17	48.51%
Guillemot	1.72	1.22	2.27	1743	1233	2290	278	15.94%
Razorbill	0.27	0.15	0.4	274	154	403	65	23.73%
Puffin	0.12	0.07	0.19	124	71	189	31	24.95%
Gannet	1.23	0.9	1.62	1239	915	1639	185	14.88%

**Table 61: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 21 on 01 December 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	14.99	9.97	21.66	15150	10074	21898	2985	19.70%
<b>Species group</b>								
Small gull species	1.05	0.61	1.54	1062	616	1559	246	23.12%
Large gull species	0.06	0.01	0.12	64	8	121	29	45.57%
Gull species	0.01	0	0.02	9	0	24	8	91.33%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
Large auk	12.23	7.86	17.53	12360	7947	17717	2550	20.63%
Small auk	0.05	0	0.12	56	0	124	32	56.21%
Auk species	1.25	0.72	1.81	1261	725	1829	286	22.65%
Auk / small gull	0.11	0.03	0.23	116	30	231	55	47.25%
Diver species	0.02	0	0.04	16	0	38	11	65.01%
Fulmar / gull species	0.26	0.17	0.36	264	172	362	48	18.11%
Gannet species	0.2	0.02	0.47	202	23	474	123	60.77%

**Table 62: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 21 on 01 December 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.04	0.66	1.49	1047	665	1504	226	21.58%
Little gull	0.01	0	0.02	8	0	24	8	95.66%
Common gull	0.01	0	0.02	9	0	24	8	95.83%
Great black-backed gull	0.01	0	0.02	8	0	24	8	91.66%
Herring gull	0.06	0.01	0.11	57	12	107	26	44.75%
Little auk	0.3	0.14	0.49	307	144	492	91	29.41%
Guillemot	10.82	7.24	15.87	10934	7323	16041	2297	21%
Razorbill	1.06	0.57	1.56	1068	572	1580	259	24.19%
Puffin	0.01	0	0.02	8	0	24	8	97.82%
Red-throated diver	0.02	0	0.04	16	0	38	11	63.30%
Fulmar	0.26	0.16	0.37	258	158	373	53	20.48%
Gannet	0.2	0.02	0.49	199	20	497	129	64.68%

**Table 63: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 21 on 01 December 2020**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	1.09	0.68	1.63	1104	690	1644	251	22.69%
Black-headed gull	0	0	0	1	0	1	1	100.21%
Little gull	0.01	0	0.02	9	0	24	8	88.83%
Common gull	0.01	0	0.03	14	2	32	9	60.52%
Great black-backed gull	0.01	0	0.02	9	0	24	8	94.47%
Herring gull	0.06	0.02	0.11	60	16	108	25	40.72%
Little auk	0.43	0.21	0.7	440	216	704	120	27.13%
Guillemot	11.44	7.44	16.37	11563	7519	16547	2305	19.93%
Razorbill	1.52	0.97	2.15	1537	981	2170	317	20.59%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Puffin	0.02	0.01	0.04	26	14	42	8	30.22%
Red-throated diver	0.02	0	0.04	16	0	39	10	62.18%
Fulmar	0.26	0.17	0.37	263	170	370	52	19.71%
Gannet	0.19	0.02	0.46	195	23	469	122	62.83%

**Table 64: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 22 on 19 January 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	14.09	11.32	17.34	14240	11448	17533	1626	11.41%
<b>Species group</b>								
Small gull species	2.24	1.39	3.21	2265	1408	3248	493	21.73%
Black-backed gull species	0.01	0	0.02	9	0	24	8	91.41%
Large gull species	0.09	0.03	0.17	89	31	174	38	42.74%
Gull species	0.02	0	0.05	24	0	47	12	48.59%
Large auk	10.47	8.3	12.71	10587	8386	12849	1153	10.89%
Auk species	1.1	0.86	1.36	1114	867	1374	135	12.05%
Auk / small gull	0.01	0	0.02	8	0	24	7	91.03%
Diver species	0.01	0	0.02	9	0	24	8	90.86%
Fulmar / gull species	0.1	0.04	0.17	103	40	176	36	34.81%
Gannet species	0.09	0.04	0.15	89	38	151	30	33.59%

**Table 65: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 22 on 19 January 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.2	1.27	3.34	2224	1282	3375	521	23.40%
Common gull	0.02	0	0.05	23	0	48	12	52.62%
Great black-backed gull	0.04	0.01	0.07	39	15	70	15	37.07%
Herring gull	0.06	0.02	0.11	63	16	117	27	42.31%
Little auk	0.03	0	0.08	26	0	81	24	92.49%
Guillemot	7.42	5.91	8.93	7498	5971	9025	828	11.04%
Razorbill	2.69	1.91	3.64	2720	1930	3679	437	16.04%
Puffin	0.01	0	0.02	9	0	24	8	86.22%
Fulmar	0.1	0.04	0.18	103	42	185	38	36.36%
Gannet	0.09	0.04	0.15	87	39	148	30	33.71%

**Table 66: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 22 on 19 January 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.19	1.35	3.22	2210	1369	3257	484	21.87%
Common gull	0.02	0	0.05	24	0	53	13	53.55%
Great black-backed gull	0.04	0.01	0.07	40	15	71	15	37.28%
Herring gull	0.07	0.02	0.13	70	23	134	29	41.61%
Little auk	0.13	0.09	0.18	135	94	184	24	17.43%
Guillemot	8.22	6.71	9.83	8313	6779	9941	846	10.18%
Razorbill	3.18	2.42	4.19	3218	2445	4233	449	13.95%
Puffin	0.02	0.01	0.04	22	11	40	8	37.58%
Fulmar	0.1	0.04	0.19	103	38	191	40	38.27%
Gannet	0.09	0.03	0.15	87	32	148	32	36.12%

**Table 67: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 23 on 16 February 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	9.96	5.54	15.8	10074	5599	15976	2696	26.76%
<b>Species group</b>								
Small gull species	2.74	0.58	6.21	2772	590	6277	1455	52.47%
Large gull species	0.01	0	0.02	9	0	24	8	86.03%
Gull species	0.02	0	0.04	16	0	39	10	61.89%
Large auk	5.93	3.82	8.45	5992	3857	8539	1243	20.74%
Small auk	0.08	0.03	0.13	79	31	129	27	34.16%
Auk species	0.64	0.38	0.98	649	380	988	155	23.81%
Auk / small gull	0.1	0.02	0.22	103	24	222	56	54.47%
Fulmar / gull species	0.15	0.08	0.23	155	84	231	39	25.26%
Gannet species	0.12	0.01	0.28	125	16	286	72	57.06%

**Table 68: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 23 on 16 February 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.79	0.58	6.03	2822	589	6091	1458	51.65%
Herring gull	0.01	0	0.03	9	0	30	9	94.36%
Little auk	0.01	0	0.02	8	0	24	8	94.57%
Guillemot	4.47	2.85	6.7	4517	2885	6776	1011	22.37%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Razorbill	1.15	0.65	1.7	1159	661	1714	270	23.28%
Puffin	0.19	0.09	0.31	192	95	314	58	30.14%
Fulmar	0.11	0.05	0.16	110	56	164	28	25.46%
Gannet	0.13	0.02	0.28	128	16	288	73	56.43%

**Table 69: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 23 on 16 February 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	2.83	0.58	5.72	2857	586	5785	1445	50.57%
Herring gull	0.02	0	0.03	16	2	34	9	52.05%
Little auk	0.02	0	0.03	16	4	31	8	50.19%
Guillemot	5.08	3.18	7.21	5137	3219	7289	1050	20.43%
Razorbill	1.34	0.81	2	1356	815	2020	303	22.32%
Puffin	0.36	0.22	0.51	363	219	513	77	21.18%
Fulmar	0.15	0.07	0.23	156	74	237	42	26.72%
Gannet	0.12	0.01	0.29	127	16	291	71	55.76%

**Table 70: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 24 on 12 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	32.21	27.5	37.89	32565	27802	38306	2635	8.09%
<b>Species group</b>								
Small gull species	6.74	4.73	8.76	6811	4778	8858	1076	15.79%
Gull species	0.02	0	0.05	24	0	53	13	54.27%
Large auk	23.31	19.94	27.51	23559	20156	27811	2021	8.57%
Small auk	0.13	0.04	0.28	137	38	279	62	45.18%
Auk species	1.49	1.07	1.97	1502	1079	1992	235	15.61%
Auk / small gull	0.11	0.05	0.18	111	50	183	36	32.41%
Large auk / diver species	0.01	0	0.02	8	0	24	8	103.43%
Fulmar / gull species	0.1	0.01	0.21	97	12	212	56	57.02%
Gannet species	0.56	0.42	0.7	571	429	708	69	12.05%
Small bird species	0.01	0	0.02	9	0	24	8	94.21%

**Table 71: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 24 on 12 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	6.72	4.85	8.93	6794	4902	9029	1060	15.59%
Common gull	0.02	0	0.04	17	0	40	11	63.92%
Herring gull	0.01	0	0.02	9	0	24	8	95.59%
Guillemot	19.93	16.33	23.66	20142	16505	23913	1878	9.32%
Razorbill	2.84	1.74	4.07	2871	1755	4110	585	20.36%
Puffin	0.43	0.26	0.64	440	264	649	99	22.30%
Fulmar	0.03	0	0.06	31	4	63	16	50.73%
Gannet	0.57	0.44	0.68	573	445	692	67	11.57%

**Table 72: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 24 on 12 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Kittiwake	6.85	4.91	9.08	6924	4969	9179	1059	15.28%
Common gull	0.02	0	0.04	16	1	39	11	65.43%
Herring gull	0.01	0	0.03	11	0	29	8	73.34%
Guillemot	20.89	17.47	24.5	21115	17661	24770	1913	9.06%
Razorbill	3.14	2.05	4.24	3171	2076	4290	582	18.35%
Puffin	0.85	0.58	1.15	862	586	1167	147	16.99%
Fulmar	0.03	0	0.06	32	4	65	16	50.71%
Gannet	0.57	0.43	0.69	576	438	698	69	11.89%

**Table 73: Unapportioned density and population estimates of species groups in the Berwick Bank Development array only during Survey 25 on 26 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
All birds	82.19	58.39	106.97	83086	59023	108131	12436	14.97%
<b>Species group</b>								
Duck species	0.02	0	0.05	16	0	48	16	96.35%
Small gull species	20	10.28	33.42	20213	10396	33781	6046	29.91%
Black-backed gull species	0.01	0	0.02	8	0	24	8	92.86%
Gull species	0.03	0	0.07	32	0	69	17	53.56%
Tern / small gull species	0.02	0	0.06	25	0	63	18	73.95%
Large auk	54.93	39.71	70.03	55525	40137	70787	7420	13.36%
Small auk	0.7	0.37	1.02	706	374	1036	171	24.20%
Auk species	3.77	2.83	4.83	3815	2862	4884	514	13.47%
Auk / small gull	0.54	0.24	0.95	545	239	964	195	35.63%

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Broad category</b>								
Diver species	0.01	0	0.02	8	0	24	8	98.96%
Fulmar / gull species	0.21	0.1	0.37	215	97	373	73	33.70%
Gannet species	1.44	0.43	3.13	1452	437	3166	722	49.70%

**Table 74: Unapportioned density and population estimates of species in the Berwick Bank Development array only during Survey 25 on 26 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Tufted duck	0.02	0	0.05	16	0	47	15	92.91%
Kittiwake	20.51	10.57	32.76	20736	10686	33118	5781	27.88%
Little gull	0.02	0	0.04	16	0	39	11	66.41%
Common gull	0.05	0.01	0.11	50	8	107	27	53.47%
Guillemot	53.32	38.78	66.97	53895	39206	67700	7166	13.29%
Razorbill	1.17	0.88	1.49	1181	888	1509	155	13.08%
Puffin	2.88	2.04	3.73	2910	2064	3773	438	15.02%
Red-throated diver	0.01	0	0.02	8	0	24	8	92.67%
Fulmar	0.12	0.06	0.18	122	63	184	32	25.76%
Gannet	1.41	0.42	2.88	1430	422	2913	688	48.08%

**Table 75: Apportioned density and population estimates of species in the Berwick Bank Development array only during Survey 25 on 26 April 2021**

Category	Density Estimate (birds/km <sup>2</sup> )	Lower 95% CI (birds/km <sup>2</sup> )	Upper 95% CI (birds/km <sup>2</sup> )	Population Estimate (number)	Lower 95% CI (number)	Upper 95% CI (number)	SD	CV
<b>Species</b>								
Tufted duck	0.02	0	0.05	17	0	48	15	91.50%
Kittiwake	20.7	10.61	32.66	20923	10721	33018	5943	28.40%
Little gull	0.03	0.01	0.06	31	9	60	13	41.25%
Common gull	0.05	0.01	0.09	48	8	94	23	47.18%
Herring gull	0.01	0	0.02	8	0	16	5	52.52%
Guillemot	54.16	40.63	69.49	54752	41068	70248	7448	13.60%
Razorbill	1.31	0.99	1.64	1325	1006	1660	169	12.74%
Puffin	4.12	3.02	5.38	4164	3053	5438	607	14.58%
Red-throated diver	0.01	0	0.02	9	0	24	8	95.51%
Fulmar	0.19	0.09	0.32	194	92	328	61	31.19%
Gannet	1.41	0.42	2.82	1428	421	2849	651	45.57%

