NORTH FALLS

Offshore Wind Farm

ENVIRONMENTAL STATEMENT

Appendix 13.2 Offshore Ornithology Technical Report

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Glossary of Acronyms

BDMPS	Biologically Defined Minimum Population Scales
BTO	British Trust for Ornithology
CRM	Collision Risk Modelling
DCO	Development Consent Order
ES	Environmental Statement
ETG	Expert Topic Group
GSD	Ground Sample Distance
GPS	Global Positioning System
JNCC	Joint Nature Conservation Committee
KDE	Kernel Density Estimation
LCL	Lower Confidence Limit
NAF	Nocturnal Activity Factor
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
QA	Quality Assurance
RIAA	Report to Inform Appropriate Assessment
sCRM	Stochastic Collision Risk Modelling
SD	Standard Deviation
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UCL	Upper Confidence Limit

Glossary of Terminology

Array area	The offshore wind farm area, within which the wind turbine generators, array cables, platform interconnector cable, offshore substation platform(s) and/or offshore converter platform will be located.
Landfall	The location where the offshore export cables come ashore at Kirby Brook.
Migration free breeding season	The breeding season for migratory seabird species is defined as a wider breeding season and a narrower window known as the migration free breeding season. In a given species, the timing of breeding will vary depending on the location of the breeding area; with the start of breeding usually later in more northerly locations. Thus, while birds at some colonies are beginning to nest, others may still be migrating to breeding sites. A core or migration free breeding season is defined as the period when all or the majority of breeding adults of a given species are present at breeding colonies.
Offshore cable corridor	The corridor of seabed from the array area to the landfall within which the offshore export cables will be located.
Offshore export cables	The cables which bring electricity from the offshore substation platform(s) to the landfall, as well as auxiliary cables.
The Project or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
Wind turbine generator	Power generating device that is driven by the kinetic energy of the wind.

1 Introduction

1. This technical appendix accompanies the offshore ornithology Environmental Statement (ES) chapter (ES Chapter 13 Offshore Ornithology (Document Reference: 3.3.15)) and Report to Inform Appropriate Assessment Part 4 (RIAA) (Document Reference 7.1.4). It presents an overview of the data collected from baseline digital aerial surveys and the results of analyses of these data required for the ES and RIAA.

2 Digital aerial surveys

2. Baseline digital aerial surveys for offshore birds were carried out by Hi-Def Aerial Surveying Limited. Methodology text and tables in Section 2 below and figures in Annex 3 originate from the Digital Video Aerial Surveys Two Year Report produced by Hi-Def Aerial Surveying Limited (2021).

2.1 Methods

3. HiDef designed a survey that placed transects at 2.5km apart across the 772km^2 survey area, including a 4km buffer around the proposed North Falls Offshore Wind Farm (herein referred to as North Falls) site (Annex 3, Figure 13.2.1). An extended 12km buffer to the west of the site was added for January and February 2021 surveys, in anticipation that displacement for red-throated diver would need to be assessed over a greater distance from the proposed turbine arrays than the previous standard of 4km (SNCBs, 2017). This created a revised survey area of 1,370km^2 (Annex 3, Figure 13.2.2).

4. A series of strip transects were flown monthly between March 2019 and February 2021, following the methodology agreed between HiDef and North Falls Offshore Wind Farm Limited (NFOW) in February 2019.

5. The survey design consisted of 16 (19 in January and February 2021) strip transects extending roughly north-west to south-east, perpendicular to the depth contours along the coast. The transect-based non-stratified survey design helps to ensure that each transect samples a similar range of habitats (primarily relating to water depth) to reduce the variation in bird abundance estimates between transects.

6. Surveys were undertaken using an aircraft equipped with four (4) HiDef Gen II cameras with sensors set to a resolution of 2cm Ground Sample Distance (GSD). Each camera sampled a strip of 125m width, separated from the next camera by ~25m, thus providing a combined sampled width of 500m within a 575m overall strip.

7. Initially a minimum target of 10% site coverage was set. Due to concurrent surveys across the operational Galloper array for post-construction monitoring, a supernumerary 15% site coverage was achieved for the months March to September, December and February, with data from three (3) cameras processed for these nine (9) surveys. Following correspondence with Natural England, survey coverage was increased to 15% (three cameras processed) in all months. This ensured a survey with sufficient coverage and number of transects, with the remaining unprocessed data archived.

8. Correspondence between Natural England and NFOW over survey design and coverage is summarised in ES Appendix 13.1 (Document Reference: 3.3.12). It is noted that baseline surveys for OWFs are designed for site characterisation, rather than to provide a baseline to detect specific changes in seabird numbers and distribution in subsequent surveys. In due course, pre-construction surveys are likely to be proposed as part of an ornithological monitoring programme for North Falls, at a stage where the key bird species and impacts to be monitored has been clarified through Development Consent Order (DCO) Examination. At this stage it will be clear which are the key species and the power to detect change that will be required during monitoring.

9. The surveys were flown along the transect patterns shown in Annex 3, Figure 13.2.1 and Figure 13.2.2 at a height of approximately 550m above sea level (ASL) (~1800'). Flying at this height ensures that there is no risk of flushing those species which have been proven to be easily disturbed by aircraft noise (Thaxter et al., (2016) recommends a minimum flight altitude of 500m ASL).

10. Position data for the aircraft was captured from a Garmin GPSMap 296 receiver with differential GPS enabled to give 1m accuracy for the positions and recording updates in location at one second intervals for later matching to bird observations.

11. Data were viewed by trained reviewers who marked any objects in the footage as requiring further analysis, as well as determining which are birds, marine megafauna (defined within this report as cetaceans, pinnipeds or other large, non-avian marine fauna) or anthropogenic objects such as ships or buoys.

12. As part of HiDef's quality assurance (QA) process, an additional 'blind' review of 20% of the raw data was carried out and the results compared with those of the original review. If 90% agreement is not attained during the QA process, then corrective action is initiated: the remaining data set is reviewed and where appropriate, the failed reviewer's data discarded and all the data re-reviewed. In addition, additional training is then given to the reviewer to improve performance. No re-reviews were required for the data set.

13. An object is only recorded where it reaches a reference line (known as 'the red line') which defines the true transect width of 125m for each camera. By excluding objects that do not cross the red line, biases to abundance estimates caused by flux (movement of objects in the video footage relative to the aircraft, such as 'wing wobble') are eliminated.

14. Images marked as requiring further analysis were reviewed by specialist ornithologists for identification (ID) to the lowest taxonomic level possible and for assessment of the approximate age and the sex of each animal, as well as any behaviour traits visible from the imagery.

15. At least 20% of all objects were selected at random and subjected to a separate 'blind' QA process. If less than 90% agreement was attained for any individual camera then corrective action is initiated: if appropriate, the failed identifier's data were discarded and the data re-identified. Any disputed identifications were passed to a third-party expert ornithologist for a final decision1. The level of agreement within the QA process is calculated as the final number of agreements as a percentage of all identifications subjected for QA for the entire survey.

16. All objects are assigned to a species group and where practicable, each of these then further identified to species level. The species identifications are given a confidence rating of 'possible', 'probable' or 'definite'. It is important to note that this is not a standardised assessment. The likelihood of achieving a definite or probable identification is not consistent for all component members of a species group. For example, someone undertaking ID of a large auk species will find it easier to be confident of guillemot identification than razorbill. If these confidence scores are used to filter or weight the probability of large auk being one species or another in any analysis, then this will lead to biased results, particularly if the identification rate is low. It is better to use the assessment of the person who is looking at the images rather than making assumptions based on biased data with high confidence identifications.

17. Any animals that could not be identified to species level were assigned to a category 'No ID'. If, on occasion, the unidentified bird is suspected of belonging to two different possible genera, then a broader group category may be used. For example, a bird would usually be assigned to the group category 'Shearwater species' if identified as a Manx shearwater Puffinus puffinus, or to 'Auk species' if identified as a guillemot. However, if the bird has the potential to be either, then it would be assigned to the group category 'Shearwater / Auk species' and the species level recorded as No_ID.

18. Table 2.1 and Table 2.2 show the identification level (species or species group) and the total count of all birds identified across the 24 months of DAS separated out by confidence level of the given identification, for all surveys combined and per survey, respectively.

Table 2.1 Total individuals identified from all surveys to species or 'species group' categorised by identification confidence level

Identification Level	Confidence Level			Total
	Definite	Probable	Possible	
Species				
Arctic skua	0	1	0	1
Black-headed gull	31	7	1	39
Brent goose	0	3	0	3
Carrion crow	1	0	0	1
Chaffinch	0	48	0	48
Common gull	23	112	19	154
Common tern	4	14	14	32
Cormorant	5	4	0	9
Feral pigeon	0	0	1	1
Fieldfare	0	0	5	5
Fulmar	41	23	13	77
Gannet	592	28	9	629
Great black-backed gull	103	90	15	208
Great skua	0	1	0	1

Identification Level	Confidence Level			Total
	Definite	Probable	Possible	
Guillemot	728	2840	786	4354
Herring gull	28	40	16	84
Kittiwake	1226	727	101	2054
Lesser black-backed gull	242	405	47	694
Little gull	13	20	4	37
Mediterranean gull	0	0	1	1
Osprey	1	0	0	1
Peregrine	0	1	0	1
Puffin	2	0	3	5
Razorbill	274	1490	1191	2955
Red-throated diver	135	236	16	387
Sandwich tern	8	6	3	17
Shelduck	13	0	0	13
Sparrowhawk	1	0	0	1
Starling	0	0	59	59
Whimbrel	0	7	0	7
Wigeon	4	0	0	4
Species group				
Arctic / common tern	21	4	0	25
Auk / small gull	31	8	1	40
Auk species	204	34	3	241
Black-backed gull species	311	78	4	393
Cormorant / shag	9	0	0	9
Diver species	276	90	4	370
Duck species	17	0	0	17
Fulmar / gull species	83	4	2	89
Gannet species	601	20	8	629
Goose species	0	3	0	3
Gull species	39	13	1	53
Large auk	5530	1450	70	7050
Large auk / diver species	16	11	0	27
Large gull species	524	42	0	566

Identification Level	Confidence Level			Total
	Definite	Probable	Possible	
Passerine species	113	1	0	114
Raptor species	2	1	0	3
Skua excluding great	1	0	0	1
Skua species	1	0	0	1
Small auk	1	0	0	1
Small gull species	1922	289	7	2218
Tern / small gull	1	1	0	2
Tern species	21	2	0	23
Wader species	7	0	0	7

Table 2.2 Total individuals identified to species or 'species group' categorised by identification confidence level per survey

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
Species					
Arctic skua	2019-11-06	0	1	0	1
Black-headed gull	2019-03-26	3	1	0	4
	2019-07-01	2	0	0	2
	2019-10-05	3	0	0	3
	2020-04-09	7	1	0	8
	2020-07-21	5	4	1	10
	2020-08-05	3	0	0	3
	2020-10-09	1	0	0	1
	2020-11-06	6	1	0	7
	2021-02-13	1	0	0	1
Brent goose	2019-06-06	0	1	0	1
	2020-11-06	0	2	0	2
Carrion crow	2020-05-03	1	0	0	1
Chaffinch	2020-10-09	0	48	0	48
Common gull	2019-03-26	2	2	0	4
	2019-04-05	2	1	1	4
	2019-10-05	0	1	0	1
	2019-11-06	0	3	0	3
	2020-01-18	1	1	0	2
	2020-02-14	4	6	1	11
	2020-03-11	0	1	0	1
	2020-04-09	0	88	11	99
	2020-05-03	1	0	0	1

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2020-10-09	1	0	0	1
	2020-11-06	1	1	1	3
	2020-12-15	0	1	0	1
	2021-01-22	3	5	5	13
	2021-02-13	8	2	0	10
Common tern	2019-07-01	0	2	0	2
	2019-08-28	3	7	0	10
	2020-04-09	0	0	7	7
	2020-05-03	0	3	4	7
	2020-08-05	0	0	1	1
	2020-09-02	1	2	2	5
Cormorant	2019-03-26	1	0	0	1
	2020-05-03	3	0	0	3
	2020-07-21	0	2	0	2
	2020-09-02	0	2	0	2
	2020-11-06	1	0	0	1
Feral pigeon	2021-01-22	0	0	1	1
Fieldfare	2020-10-09	0	0	5	5
Fulmar	2019-03-26	9	2	0	11
	2019-04-05	2	3	2	7
	2019-05-11	16	3	0	19
	2019-09-10	1	0	0	1
	2019-10-05	1	0	1	2
	2019-11-06	3	1	0	4
	2020-01-18	0	1	0	1
	2020-02-14	0	1	0	1
	2020-03-11	1	0	0	1
	2020-04-09	3	0	0	3
	2020-05-03	5	10	8	23
	2020-07-21	0	1	1	2
	2020-12-15	0	0	1	1
	2021-01-22	0	1	0	1
Gannet	2019-03-26	22	1	1	24
	2019-04-05	7	3	0	10
	2019-05-11	1	0	0	1
	2019-06-06	9	0	0	9
	2019-07-01	9	0	0	9
	2019-08-28	30	2	0	32
	2019-09-10	4	4	0	8
	2019-10-05	29	1	1	31

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2019-11-06	136	2	1	139
	2019-12-23	15	1	1	17
	2020-01-18	4	0	0	4
	2020-02-14	87	7	3	97
	2020-03-11	1	0	0	1
	2020-05-03	15	0	0	15
	2020-06-20	3	1	0	4
	2020-07-21	8	0	0	8
	2020-08-05	7	0	0	7
	2020-09-02	19	0	0	19
	2020-10-09	23	1	0	24
	2020-11-06	70	3	1	74
	2020-12-15	73	2	1	76
	2021-01-22	9	0	0	9
	2021-02-13	11	0	0	11
Great black-backed gull	2019-03-26	6	0	0	6
	2019-04-05	2	8	1	11
	2019-05-11	1	0	0	1
	2019-06-06	0	1	1	2
	2019-08-28	0	2	2	4
	2019-09-10	1	3	0	4
	2019-10-05	16	12	5	33
	2019-11-06	2	2	1	5
	2019-12-23	2	4	0	6
	2020-01-18	3	7	0	10
	2020-02-14	7	6	4	17
	2020-03-11	1	1	0	2
	2020-04-09	0	17	0	17
	2020-06-20	1	0	0	1
	2020-09-02	1	0	0	1
	2020-10-09	16	5	0	21
	2020-11-06	5	1	0	6
	2020-12-15	18	13	0	31
	2021-01-22	8	5	1	14
	2021-02-13	13	3	0	16
Great Skua	2019-10-05	0	1	0	1
Guillemot	2019-03-26	205	174	11	390
	2019-04-05	155	218	39	412
	2019-05-11	0	12	2	14
	2019-06-06	0	1	2	3

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2019-07-01	5	2	2	9
	2019-08-28	4	2	1	7
	2019-09-10	7	6	1	14
	2019-10-05	1	28	19	48
	2019-11-06	10	99	24	133
	2019-12-23	18	281	80	379
	2020-01-18	6	120	19	145
	2020-02-14	192	973	339	1504
	2020-03-11	0	44	4	48
	2020-04-09	0	76	5	81
	2020-05-03	23	29	10	62
	2020-06-20	1	12	5	18
	2020-07-21	2	9	1	12
	2020-08-05	0	5	0	5
	2020-09-02	3	10	0	13
	2020-10-09	0	6	4	10
	2020-11-06	0	33	19	52
	2020-12-15	3	214	146	363
	2021-01-22	91	352	25	468
	2021-02-13	2	134	28	164
Herring Gull	2019-03-26	2	4	0	6
	2019-04-05	1	0	0	1
	2019-06-06	7	5	5	17
	2019-07-01	1	0	0	1
	2019-08-28	0	2	0	2
	2019-09-10	1	2	0	3
	2019-10-05	0	3	1	4
	2019-11-06	0	1	1	2
	2020-01-18	0	2	1	3
	2020-02-14	2	1	1	4
	2020-04-09	0	5	0	5
	2020-05-03	2	1	1	4
	2020-06-20	0	1	0	1
	2020-07-21	0	1	0	1
	2020-08-05	0	0	1	1
	2020-10-09	3	4	2	9
	2020-11-06	0	2	2	4
	2020-12-15	1	2	1	4
	2021-01-22	0	4	0	4
	2021-02-13	8	0	0	8

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
Kittiwake	2019-03-26	179	57	2	238
	2019-04-05	47	26	3	76
	2019-05-11	57	5	3	65
	2019-06-06	41	57	6	104
	2019-07-01	22	0	0	22
	2019-08-28	28	25	11	64
	2019-09-10	9	18	1	28
	2019-10-05	10	14	3	27
	2019-11-06	46	22	2	70
	2019-12-23	67	19	12	98
	2020-01-18	65	78	2	145
	2020-02-14	199	127	23	349
	2020-03-11	17	27	1	45
	2020-04-09	6	21	0	27
	2020-05-03	20	13	5	38
	2020-06-20	24	10	1	35
	2020-07-21	26	13	1	40
	2020-08-05	16	6	0	22
	2020-09-02	3	5	0	8
	2020-10-09	6	0	0	6
	2020-11-06	34	18	8	60
	2020-12-15	99	109	6	214
	2021-01-22	77	39	7	123
	2021-02-13	128	18	4	150
Lesser black-backed gull	2019-03-26	9	1	0	10
	2019-04-05	19	35	10	64
	2019-05-11	8	1	0	9
	2019-06-06	79	97	11	187
	2019-07-01	18	7	0	25
	2019-08-28	36	25	2	63
	2019-09-10	16	7	0	23
	2019-10-05	0	3	0	3
	2019-12-23	1	6	0	7
	2020-01-18	0	2	6	8
	2020-02-14	4	11	1	16
	2020-03-11	2	3	0	5
	2020-04-09	1	120	3	124
	2020-05-03	23	3	2	28
	2020-06-20	19	44	6	69
	2020-07-21	0	14	2	16

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2020-08-05	0	10	1	11
	2020-09-02	1	2	1	4
	2020-10-09	3	1	0	4
	2020-11-06	0	3	0	3
	2020-12-15	0	2	0	2
	2021-01-22	0	5	2	7
	2021-02-13	3	3	0	6
Little gull	2019-08-28	0	1	1	2
	2019-10-05	0	10	3	13
	2019-11-06	3	3	0	6
	2019-12-23	0	1	0	1
	2020-10-09	5	2	0	7
	2020-11-06	1	2	0	3
	2021-02-13	4	1	0	5
Mediterranean gull	2021-01-22	0	0	1	1
Osprey	2020-09-02	1	0	0	1
Peregrine	2019-10-05	0	1	0	1
Puffin	2019-03-26	2	0	0	2
	2019-04-05	0	0	1	1
	2019-06-06	0	0	1	1
	2019-10-05	0	0	1	1
Razorbill	2019-03-26	74	98	22	194
	2019-04-05	6	28	33	67
	2019-05-11	0	3	4	7
	2019-06-06	0	2	0	2
	2019-10-05	5	33	46	84
	2019-11-06	3	44	53	100
	2019-12-23	8	384	138	530
	2020-01-18	13	49	107	169
	2020-02-14	91	166	276	533
	2020-03-11	12	46	22	80
	2020-04-09	0	2	0	2
	2020-05-03	7	0	4	11
	2020-08-05	0	1	3	4
	2020-09-02	0	1	0	1
	2020-10-09	12	5	10	27
	2020-11-06	1	23	84	108
	2020-12-15	29	362	217	608
	2021-01-22	5	134	81	220
Red-throated diver	2019-03-26	3	0	0	3

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2019-04-05	2	1	0	3
	2019-11-06	1	1	0	2
	2019-12-23	0	4	0	4
	2020-01-18	0	2	0	2
	2020-02-14	8	91	4	103
	2020-03-11	4	6	0	10
	2020-12-15	1	1	1	3
	2021-01-22	23	36	3	62
Sandwich tern	2019-03-26	1	0	0	1
	2019-04-05	0	0	1	1
	2019-05-11	7	0	0	7
	2020-04-09	0	1	0	1
	2020-05-03	0	2	2	4
	2020-09-02	0	3	0	3
Shelduck	2019-06-06	11	0	0	11
	2019-10-05	2	0	0	2
Sparrowhawk	2019-03-26	1	0	0	1
Starling	2019-11-06	0	0	59	59
Whimbrel	2020-07-21	0	7	0	7
Wigeon	2020-09-02	4	0	0	4
Species groups					
Arctic / common tern	2019-07-01	0	2	0	2
	2019-08-28	10	0	0	10
	2020-04-09	6	1	0	7
	2020-05-03	4	1	0	5
	2020-08-05	1	0	0	1
Auk / small gull	2019-03-26	3	0	0	3
	2019-04-05	1	1	0	2
	2019-11-06	1	0	0	1
	2020-01-18	1	0	0	1
	2020-02-14	15	4	1	20
	2020-07-21	0	1	0	1
	2020-11-06	3	0	0	3
	2020-12-15	1	0	0	1
	2021-01-22	6	2	0	8
Auk species	2019-03-26	19	3	0	22
	2019-04-05	11	2	0	13
	2019-05-11	1	0	0	1
	2019-06-06	1	0	1	2
	2019-07-01	1	0	0	1

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2019-10-05	5	3	2	10
	2019-11-06	16	2	0	18
	2020-01-18	13	0	0	13
	2020-02-14	111	8	0	119
	2020-11-06	21	4	0	25
	2021-01-22	5	12	0	17
Black-backed gull species	2019-04-05	34	10	0	44
	2019-06-06	73	30	0	103
	2019-07-01	1	0	0	1
	2019-08-28	53	11	0	64
	2019-09-10	0	9	0	9
	2019-10-05	15	5	0	20
	2019-11-06	1	0	0	1
	2019-12-23	3	0	0	3
	2020-01-18	13	1	0	14
	2020-02-14	10	0	3	13
	2020-03-11	2	0	0	2
	2020-04-09	73	7	1	81
	2020-05-03	4	0	0	4
	2020-06-20	7	5	0	12
	2020-07-21	3	0	0	3
	2020-08-05	6	0	0	6
	2020-09-02	2	0	0	2
	2020-10-09	4	0	0	4
	2020-12-15	2	0	0	2
	2021-01-22	5	0	0	5
Cormorant / shag	2019-03-26	1	0	0	1
	2020-05-03	3	0	0	3
	2020-07-21	2	0	0	2
	2020-09-02	2	0	0	2
	2020-11-06	1	0	0	1
Diver species	2019-03-26	3	0	0	3
	2019-04-05	3	0	0	3
	2019-11-06	1	1	0	2
	2019-12-23	3	1	0	4
	2020-01-18	1	1	0	2
	2020-02-14	60	34	1	95
	2020-03-11	10	0	0	10
	2020-12-15	2	0	1	3
	2021-01-22	50	9	1	60

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2021-02-13	143	44	1	188
Duck species	2019-06-06	11	0	0	11
	2019-10-05	2	0	0	2
	2020-09-02	4	0	0	4
Fulmar / gull species	2019-03-26	12	0	0	12
	2019-04-05	9	0	2	11
	2019-05-11	21	0	0	21
	2019-06-06	0	1	0	1
	2019-09-10	1	0	0	1
	2019-10-05	2	0	0	2
	2019-11-06	4	0	0	4
	2020-01-18	1	0	0	1
	2020-02-14	1	1	0	2
	2020-03-11	1	0	0	1
	2020-04-09	3	0	0	3
	2020-05-03	22	1	0	23
	2020-06-20	1	0	0	1
	2020-07-21	2	0	0	2
	2020-08-05	0	1	0	1
	2020-12-15	2	0	0	2
	2021-01-22	1	0	0	1
Gannet species	2019-03-26	22	1	1	24
	2019-04-05	8	2	0	10
	2019-05-11	1	0	0	1
	2019-06-06	9	0	0	9
	2019-07-01	9	0	0	9
	2019-08-28	31	1	0	32
	2019-09-10	4	4	0	8
	2019-10-05	29	1	1	31
	2019-11-06	136	2	1	139
	2019-12-23	15	1	1	17
	2020-01-18	4	0	0	4
	2020-02-14	90	5	2	97
	2020-03-11	1	0	0	1
	2020-05-03	15	0	0	15
	2020-06-20	4	0	0	4
	2020-07-21	8	0	0	8
	2020-08-05	7	0	0	7
	2020-09-02	19	0	0	19
	2020-10-09	23	1	0	24

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2020-11-06	73	0	1	74
	2020-12-15	73	2	1	76
	2021-01-22	9	0	0	9
	2021-02-13	11	0	0	11
Goose species	2019-06-06	0	1	0	1
	2020-11-06	0	2	0	2
Gull species	2019-03-26	2	0	0	2
	2019-05-11	1	0	0	1
	2019-06-06	1	0	0	1
	2019-08-28	1	1	0	2
	2019-09-10	1	3	0	4
	2019-10-05	3	1	0	4
	2019-11-06	3	0	0	3
	2020-02-14	10	3	0	13
	2020-03-11	1	0	0	1
	2020-04-09	0	2	0	2
	2020-05-03	1	0	0	1
	2020-06-20	2	3	0	5
	2020-07-21	1	0	0	1
	2020-11-06	2	0	0	2
	2021-01-22	8	0	0	8
	2021-02-13	2	0	1	3
Large auk	2019-03-26	535	25	3	563
	2019-04-05	410	51	5	466
	2019-05-11	20	0	0	20
	2019-06-06	3	0	1	4
	2019-07-01	7	1	0	8
	2019-08-28	6	1	0	7
	2019-09-10	8	6	0	14
	2019-10-05	65	58	0	123
	2019-11-06	152	62	1	215
	2019-12-23	715	170	22	907
	2020-01-18	172	126	2	300
	2020-02-14	1128	753	26	1907
	2020-03-11	127	1	0	128
	2020-04-09	39	40	4	83
	2020-05-03	72	1	0	73
	2020-06-20	11	7	0	18
	2020-07-21	8	3	0	11
	2020-08-05	8	1	0	9

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2020-09-02	13	1	0	14
	2020-10-09	31	4	2	37
	2020-11-06	105	29	1	135
	2020-12-15	916	55	1	972
	2021-01-22	647	18	2	667
	2021-02-13	332	37	0	369
Large auk / diver species	2019-12-23	0	2	0	2
	2020-02-14	3	9	0	12
	2021-01-22	3	0	0	3
	2021-02-13	10	0	0	10
Large gull species	2019-03-26	21	1	0	22
	2019-04-05	27	1	0	28
	2019-05-11	10	0	0	10
	2019-06-06	97	5	0	102
	2019-07-01	23	2	0	25
	2019-08-28	4	0	0	4
	2019-09-10	18	1	0	19
	2019-10-05	12	6	0	18
	2019-11-06	5	1	0	6
	2019-12-23	9	1	0	10
	2020-01-18	2	5	0	7
	2020-02-14	17	3	0	20
	2020-03-11	5	0	0	5
	2020-04-09	63	1	0	64
	2020-05-03	27	1	0	28
	2020-06-20	52	1	0	53
	2020-07-21	13	1	0	14
	2020-08-05	5	0	0	5
	2020-09-02	0	3	0	3
	2020-10-09	26	4	0	30
	2020-11-06	11	1	0	12
	2020-12-15	33	1	0	34
	2021-01-22	16	1	0	17
	2021-02-13	28	2	0	30
Passerine species	2019-11-06	59	0	0	59
	2020-05-03	1	0	0	1
	2020-10-09	53	0	0	53
	2021-01-22	0	1	0	1
Raptor species	2019-03-26	1	0	0	1
	2019-10-05	0	1	0	1

Identification Level	Survey Date	Confidence Level			Total
		Definite	Probable	Possible	
	2020-09-02	1	0	0	1
Skua excluding great	2019-11-06	1	0	0	1
Skua species	2019-10-05	1	0	0	1
Small auk	2019-03-26	1	0	0	1
Small gull species	2019-03-26	232	7	1	240
	2019-04-05	68	9	2	79
	2019-05-11	61	1	0	62
	2019-06-06	83	19	1	103
	2019-07-01	24	0	0	24
	2019-08-28	54	11	0	65
	2019-09-10	14	12	0	26
	2019-10-05	31	9	1	41
	2019-11-06	66	9	0	75
	2019-12-23	81	18	0	99
	2020-01-18	135	11	1	147
	2020-02-14	266	71	0	337
	2020-03-11	44	1	0	45
	2020-04-09	93	39	1	133
	2020-05-03	35	3	0	38
	2020-06-20	31	4	0	35
	2020-07-21	49	0	0	49
	2020-08-05	21	4	0	25
	2020-09-02	7	1	0	8
	2020-10-09	14	1	0	15
	2020-11-06	63	6	0	69
	2020-12-15	183	30	0	213
	2021-01-22	116	11	0	127
	2021-02-13	151	12	0	163
Tern / small gull	2019-04-05	1	0	0	1
	2019-10-05	0	1	0	1
Tern species	2019-03-26	1	0	0	1
	2019-05-11	7	0	0	7
	2020-04-09	1	0	0	1
	2020-05-03	6	0	0	6
	2020-09-02	6	2	0	8
Wader species	2020-07-21	7	0	0	7

19. Another species group on this site which is problematic is the 'commic' terns comprising of common and Arctic terns. Depending on angle to camera, weather conditions and bird behaviour, identification can be challenging. The

identification team take species identification to the highest level possible, but at times it is deemed safer to retain the either-or-status.

20. In the case of birds, additional information was recorded on behaviour (whether the bird was sitting, loafing on land or other objects or flying). More detail was recorded where practicable on foraging behaviour, approximate age and sex and any other details of interest. Aging of birds was based on moults and is thus mostly conducted on flying individuals and species which show seasonal variation in plumage.

21. Anthropogenic activity was recorded as either 'man-made object', 'fishing boat' or 'other boat'. Further details were noted in the comments, including further specifying the type of object (e.g. 'fishing buoy', 'marker buoy', 'wind turbine') or noting any names and numbers that can be seen.

22. HiDef's method is designed to ensure low rejection of data on grounds of quality, such as low cloud, sun glare or other issues. Care is taken to avoid survey in low cloud or poor visibility by careful selection of survey days with the correct survey conditions. In the unlikely event that low cloud occurs during a survey, the pilot is instructed to either avoid areas affected and return to those at the end of the survey, return to a nearby base and wait for cloud to clear or abandon the survey. Sun glare is avoided by design of the survey rig which uses angled cameras on a rotating plinth. This means that the cameras are angled away from any sun glare at all times, with the camera rig rotated in between transects to ensure that this angle is maintained.

23. All data undergoes a full check on return to the office consisting of a review of every camera and every transect. Any issues that may affect usability of the data are flagged at this stage and may result in a re-fly of the survey.

24. Glare data is recorded on all cameras throughout the survey. For each individual survey, on one of the cameras (known as the 'weather camera' the following weather conditions are also recorded – sea state and turbidity. Operators carrying out bird identification carry out environmental checks of the data and score sun glare and turbidity on a scale from 1-4 in which score 4 is a high degree of sun glare or turbidity in which the data should not be used because it would affect detection rates. Sea state is scored based on the WMO Sea State code, in which score 6 or more is a high degree of sea state in which the data should not be used as it would affect detection rates.

25. Table 2.3 and Table 2.4 are provided below to show how glare, sea state and turbidity are scored.

Table 2.3 Scoring criteria for recording glare and turbidity.

Score	Criteria
0	Can't tell / Not Recorded / Over land
1	None present
2	Slight
3	Moderate
4	Strong

Table 2.4 Scoring criteria for recording sea state as outlined by the WMO Sea State code.

WMO Sea State Code	Wave height (m)	Characteristics
0	0	Calm (glassy)
1	0 to 0.1	Calm (rippled)
2	0.1 to 0.5	Smooth (wavelets)
3	0.5 to 1.25	Slight (first whitecaps)
4	1.25 to 2.5	Moderate (many whitecaps)
5	2.5 to 4	Rough (some spray)
6	4 to 6	Very rough (large waves, many whitecaps, much spray)
7	6 to 9	High (streaks of wind-blown foam)
8	9 to 14	Very high
9	Over 14	Phenomenal

26. All data were geo-referenced, taking into account the offset from the transect line of the cameras, and compiled into a single output; Geographical Information System (GIS) files for the Observation and Track data are issued in ArcGIS shapefile format, using UTM31N projection, WGS84 datum.

2.2 Data analysis

2.2.1 Bird abundance and density estimates

27. All observations were compiled for analysis and presentation. Records fully identified to species level were separated out from records partially identified to group level only. Apportioning was undertaken such that partially identified records were assigned to species level based on the relative proportions of relevant species in the data set. All confidence levels of species identifications were used in the analysis.

28. The same data were then used to estimate the population size (the total number of individuals estimated to exist within the survey area) and density estimates as follows.

29. In a strip transect analysis, each transect is treated as statistically independent random samples from the site. The length of each transect and its breadth (i.e. the width of the field of view of the camera) multiplied together give the transect area; dividing the number of observations on that transect by the transect area gives a point estimate of the density of that species for the site. The density of animals at the site (and hence the population size), the standard deviation, 95% confidence limits (CL) and coefficient of variation (CV) are then estimated using a non-parametric bootstrap method with replacement (Buckland *et al*., 2001).

30. The upper and lower 95% confidence limits were calculated by way of a blocked bootstrapping technique in order to ensure equal transect effort was sampled across each iteration. This was done by using transect ID as the sampling unit with replacement, and then randomly sampling until the total length of the sampled transects equalled approximately the same length as the total survey length. A total of 5,000 bootstrap iterations were performed from which we

calculated the mean and standard deviation of the sampled means, as well as the relative standard error as defined by the standard deviation divided by the mean. Data were processed in the R programming language (version 3.4.3) and code can be provided on request. For most species these abundance estimates relate to absolute abundance, but for auks the abundance relates to relative abundance. Below we describe our method for taking account of availability, which provides a reasonable measure of absolute abundance.

31. The density estimate is expressed as the average number of animals per square km surveyed over the whole study area or the Project area, and the population estimate is then calculated as the density multiplied up to the area of the whole survey area (project area with 4 km buffer). The upper and lower CL define the range that the population estimate falls within with 95% certainty. The CV, also referred to as the relative standard error, is a measure of the precision of the population and density estimates.

32. In wildlife surveys, a proportion of seabirds that spend any time underwater, especially while feeding, will not be detectable at the surface. This may lead to an under-estimate of their abundance during surveys, which is known as availability bias. For species that make long dives underwater, this bias may be significant (for example, shag).

33. There are two main approaches to attempt to account for availability bias: by using double platform surveys (for example Borchers *et al*. 2002) which is logistically difficult to achieve and relatively expensive; and by using known data on time spent underwater to apply correction factors to abundance estimates (for example Barlow *et al*. 1988).

34. Barlow used an equation to determine the proportion of time that an animal is not available in equation 1:

$$\Pr(being\ visible) = \frac{(s+t)}{(s+d)}$$

35. Where s is the average time spent below the surface, t is the window of time that the animal is within view and d is the average time spent at the surface. In the case of digital video surveys, the value of t is negligibly small and is treated as 0.

36. Due to a lack of diving rate data for many species, availability bias corrections were only conducted on three species: guillemots, razorbills, and puffins.

37. All available data for seabirds relate to diving behaviour obtained by direct observation, or in the case of guillemots and razorbills, to data obtained during the breeding season using data loggers. Thaxter *et al*. (2010) give average times for these species engaged in flying, feeding and spent underwater during the chick-rearing period. We have used the mean time spent underwater (1.9 and 0.8 hours for guillemots and razorbills respectively) as a percentage of the mean time spent at sea not flying (8.0 and 4.6 hours respectively). Thus, the percentage time spent underwater for guillemots is 23.75% and for razorbills of 17.4%. For puffins, data from data loggers were used from Spencer (2012), which estimated that puffins spend 14.16% of daylight time underwater.

38. These correction values can only be applied to estimates of relative abundance of birds sitting on the sea, which should then be added to the abundance of

flying birds to give an estimate of absolute abundance for the species overall. For this reason, it was necessary to calculate the percentage of birds as a total of all observations and applying these to the estimates of abundance for the two species. Because of low sample sizes of guillemots and razorbills in many months, we used the percentage of sitting birds to calculate the correction factors for abundance estimates within the project area. For some species, too few observations were available to assess the ratio of sitting to flying birds with confidence and consequently, a ratio was used that pooled data for certain species. We have used these percentage figures to scale up the relative abundance estimate of guillemots, razorbills and puffins sitting on the sea by factors of 1.2375, 1.174 and 1.1416 respectively, and then added these corrected abundance estimates for sitting birds to the abundance estimate of flying birds. A scaling factor was also applied for large auks and auk species in proportion to the ratio of the estimated abundance of sitting guillemots, razorbills and puffins to each other and to other species within each of the mapped grid cells.

39. Density maps were created to display the distribution of key species only. Key species were selected based on their high abundance or their significance at nearby SPAs. For diving species (guillemot and razorbill), density mapping was undertaken using 'relative' density estimates, prior to adjustment for availability bias.

40. The density maps have been derived using a Watson-Nadaraya type kernel density estimation (KDE) technique (Simonoff 1996). In KDE, a small 'window' function (the kernel) is used to calculate a local density at each point in the study area. To evaluate the density at a given point, the kernel is centred on that point and all the observations within the window are summed to obtain a local count. The total area of the transect(s) intersecting the window is then summed to obtain a local measure of effort. By dividing the local count by the local effort, a local density estimate is obtained. To build a density map, the study area is covered with a fine mesh of study points and the density is calculated at each point in the mesh in turn.

41. Kernel techniques are robust and not as complex as other density estimation techniques because they have few parameters; as a result, they are arguably the easiest density surface technique to reproduce independently. The only variables are the size and shape of the kernel or window function. For these analyses, we have used a Gaussian window function, which has the advantages of being smooth, rotationally symmetric and easy to compute. The shape of the Gaussian window is determined by a single width parameter; the selection of this parameter is the only variable in the computation of the density maps.

42. Rather than set the width parameter arbitrarily, we have used a leave-one-out cross validation method. Cross validation estimates the predictive power of a model by removing some of the data from the data set and using the remainder of the data and the model to predict the values for the data that was removed. The closer the predicted values represent the removed data, the better the model performance and the width parameter used in the model.

43. To apply cross validation to the survey area, each transect is subdivided into 1km long segments. To evaluate a particular choice of kernel width, each segment is removed in turn, using the kernel and the remaining data to predict

the density of the missing segment and subtract the known value from the prediction to obtain an error score. This process is repeated for every segment and the error scores for all segments are squared and summed to give a total performance score for that particular choice of kernel width. The kernel width is then varied and the process repeated; if the new score is lower than the old, the new kernel width is a better choice than the previous value. An exhaustive search over all kernel widths is then used to identify the best global choice. The result is a smooth density estimate which has been derived without any manual parameter selection. The whole process is repeated from scratch for each map, as different kernel sizes are appropriate for different species.

44. It should be noted that several of the KDE maps are effectively flat (i.e. they appear the same colour throughout the study area). These correspond to distributions where the density surface as obtained from a small local kernel was not effective at predicting missing data; this can happen with evenly distributed birds, but mainly happens for very sparse distributions. In the case of sparse distributions, the 'flat' map does not necessarily mean that the true underlying distribution is 'flat'; it could mean that the data doesn't contain enough evidence to determine what the underlying distribution is. It is therefore useful to refer back to the population estimates for the corresponding map when looking at these 'flat' densities; we have also overlaid the relevant observations as dots to help with interpretation of the maps. In extreme cases, the kernel density maps were not included in the results section, and the data were only presented as dot maps. This occurred where there were fewer than five observations of the species or species group in question.

45. For less abundant bird and non-avian species, as well as those partially identified to group level, density mapping was not undertaken. Instead, distribution is illustrated by dot maps.

2.2.2 Results

2.2.2.1 Survey effort

46. The date, number of transects and survey effort (expressed by length of transects) undertaken between March 2019 and February 2021 are presented in Table 2.5. The number of transects and the total length of transects are those used in subsequent analysis.

47. Table 2.6 shows flight variations and environmental conditions of glare, sea state and turbidity during surveys. On this basis, 100% of all data collected could be used in the subsequent analysis.

Table 2.5 Monthly survey effort across the North Falls survey area

Survey date	Survey no.	No. of transects surveyed	Total length of transects analysed (km)	Area covered (Km^2)	% coverage
26 March 2019	1	16	307.01	115.13	14.91
5 April 2019	2	16	307.44	115.29	14.93
11 May 2019	3	16	307.85	115.45	14.95
6 June 2019	4	16	308.41	115.65	14.98
1 July 2019	5	16	308.38	115.64	14.98
28 August 2019	6	16	308.46	115.67	14.98

Survey date	Survey no.	No. of transects surveyed	Total length of transects analysed (km)	Area covered (Km^2)	% coverage
10 September 2019	7	16	308.91	115.84	15.01
5 October 2019	8	16	307.89	115.46	14.95
6 November 2019	9	16	307.33	115.25	14.92
23 December 2019	10	16	309.91	116.22	15.05
18 January 2020	11	16	307.89	115.46	14.95
14 February 2020	12	16	307.88	115.46	14.96
11 March 2020	13	16	307.01	115.13	14.91
09 April 2020	14	16	306.72	115.02	14.90
03 May 2020	15	16	300.89	112.83	14.62
20 June 2020	16	16	308.36	115.64	14.98
21 July 2020	17	16	308.00	115.50	14.96
05 August 2020	18	16	308.12	115.54	14.97
02 September 2020	19	16	308.42	115.66	14.98
09 October 2020	20	16	307.11	115.17	14.91
05 November 2020	21	16	307.41	115.11	14.91
15 December 2020	22	16	308.41	115.65	14.98
22 January 2021	23	16	307.38	114.32	14.80
13 February 2021	24	16	308.46	115.67	14.98

Table 2.6 Survey summary outlining times and environmental conditions across all surveys

Survey date	Survey no.	Start time	End time	Hours on task	Camera resolution	Glare (average)	Sea state (average)	Turbidity (average)
26 March 2019	1	09:15	13:00	03:45	2cm	1.00	3.00	0.00
5 April 2019	2	10:45	14:55	04:10	2cm	1.07	3.02	0.00
11 May 2019	3	10:20	14:15	03:55	2cm	1.38	3.03	0.00
6 June 2019	4	09:20	13:10	03:50	2cm	1.21	3.83	1.32
1 July 2019	5	09:20	13:05	03:45	2cm	1.00	2.98	1.03
28 August 2019	6	09:00 / 14:45	13:30 / 15:15	04:00	2cm	1.00	1.05	1.00
10 September 2019	7	09:00	12:40	03:40	2cm	1.01	2.00	1.01
5 October 2019	8	11:10	15:05	03:55	2cm	1.01	2.12	0.99
6 November 2019	9	10:35	14:50	04:15	2cm	1.00	1.99	0.00
23 December 2019	10	10:35	13:10	02:35	2cm	1.14	4.99	0.00
18 January 2020	11	09:30	13:30	04:00	2cm	1.02	3.97	0.01
14 February 2020	12	09:55	13:40	03:45	2cm	1.05	3.00	0.04
11 March 2020	13	09:48	13:32	03:44	2cm	1.00	3.85	1.00
9 April 2020	14	13:03	16:48	03:45	2cm	1.10	2.87	0.01
3 May 2020	15	09:05	12:51	03:46	2cm	1.00	1.88	0.01
20 June 2020	16	07:13	10:55	03:42	2cm	1.04	2.79	1.00
21 July 2020	17	07:08	10:53	03:45	2cm	1.13	2.38	0.00
5 August 2020	18	07:06	10:42	03:36	2cm	1.02	3.02	0.10
2 September 2020	19	08:05	11:59	03:54	2cm	1.00	1.00	1.00
9 October 2020	20	07:58	11:31	03:33	2cm	0.75	2.96	0.00
5 November 2020	21	12:03	15:26	03:23	2cm	1.03	2.98	0.01
15 December 2020	22	10:31	13:46	03:15	2cm	1.34	2.34	1.00
22 January 2020	23	10:30	13:36	03:06	2cm	1.25	3.00	0.02
13 February 2020	24	10:02	13:48	03:46	2cm	1.16	5.91	0.00

2.2.2.2 Overview of bird species recorded

48. The total number of birds recorded across the survey programme (raw counts – the number of bird images recorded in baseline surveys), including partially identified birds, are presented in Table 2.7. The distribution of all birds is presented in Annex 3, Figure 13.2.3 and Figure 13.2.4.

Table 2.7 Number of birds (raw count) recorded in the baseline survey area between March 2019 to February 2021

	Mar 19	Apr 19	May 19	Jun 19	Jul 19	Aug 19	Sep 19	Oct 19	Nov 19	Dec 19	Jan 20	Feb 20	Year 1 Total
All birds	943	694	129	352	71	195	101	304	559	1131	529	3010	8018
	Mar 20	**Apr 20**	**May 20**	**Jun 20**	**Jul 20**	**Aug 20**	**Sep 20**	**Oct 20**	**Nov 20**	**Dec 20**	**Jan 21**	**Feb 21**	**Year 2 Total**
All birds	208	435	225	150	100	57	73	196	365	1389	990	601	4789
All ext.*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	624	848	4670

* For January and February 2021 counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west, January count based on 10% coverage)

49. Overall, large numbers of birds were recorded across the wintering periods in the North Falls area, with fewer birds recorded from May to October, and a markedly high peak in abundance in February 2020. The second year of surveying recorded a 40% decrease in the number of birds compared to the first year.

50. Mean monthly abundance and density estimates for each seabird species recorded in the study area are provided in Annex 1 below. Abundance and density estimate for each species in each individual survey visit are included in Annex 2. Monthly population estimates for bird species other than seabirds recorded during baseline surveys are given in Table 2.8 below.

51. The monthly density maps for all bird species combined (Annex 3, Figure 13.2.3 and Figure 13.2.4) show birds were widespread across the whole survey area, with the highest densities often found in the southern region.

52. In response to a question from RSPB on the Ornithology Technical Appendix 13.2 provided with the North Falls PEIR (see ES Appendix 13.1 (Document Reference: 3.3.12)), on the possible influence of the neap / spring tidal cycle on the at sea distribution of birds, tidal data have been extracted tidal data via the UK Tide Gauge Network (2024) for the closest site to the OWF area (Harwich) for the relevant dates. Data for tide heights are provided at fifteen-minute intervals and were joined to the observations data based on the median time of each survey, rounded to the closest fifteen-minute interval. Tide height is plotted against apportioned density estimates (without availability bias corrections) in Annex 3, Figure 13.2.5. Spearman's rank correlation coefficient and associated p value are provided for each species, limiting the data to species present in more than five surveys and with more than ten observations across all surveys. Two species (common tern and guillemot) show significant ($P<0.05$) positive correlation between tide height and density, with lesser black-backed gull and

razorbill showing weaker non-significant positive correlation. There are likely to be multiple correlated seasonal effects here that make it difficult to unpick the effects of tidal height from, e.g. meteorological effects and this would require substantial investigation across multiple study areas to draw any firm conclusions regarding these relationships.

Table 2.8 Monthly population estimates for bird species other than seabirds recorded in the North Falls survey area (wind farm site plus 4km buffer) between March 2019 and February 2021 (HiDef 2020, 2021).

Species	J	F	M	A	M	J	J	A	S	O	N	D
Brent goose	0	0	0	0	0	7	0	0	0	0	0	0
Branta bernicla	0	0	0	0	0	0	0	0	0	0	20	0
Carrion crow	0	0	0	0	0	0	0	0	0	0	0	0
Corvus corone	0	0	0	0	7	0	0	0	0	0	0	0
Chaffinch	0	0	0	0	0	0	0	0	0	0	0	0
Fringilla coelebs	0	0	0	0	0	0	0	0	0	489	0	0
Feral pigeon	0	0	0	0	0	0	0	0	0	0	0	0
Columba livia	11	0	0	0	0	0	0	0	0	0	0	0
Fieldfare *Turdus pilaris*	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	51	0	0
Peregrine *Falco peregrinus*	0	0	0	0	0	0	0	0	0	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Osprey *Pandion haliaetus*	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	7	0	0	0
Shelduck *Tadorna tadorna*	0	0	0	0	0	74	0	0	0	21	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Sparrowhawk *Accipiter nisus*	0	0	7	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Starling *Sternus vulgaris*	0	0	0	0	0	0	0	0	0	0	547	0
	0	0	0	0	0	0	0	0	0	0	0	0
Whimbrel *Numenius phaeopus*	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	47	0	0	0	0	0
Wigeon *Anas Penelope*	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	27	0	0	0

53. Tables showing mean monthly seabird density and abundance across survey years one and two are presented in Annex 1. Tables showing seabird abundance and density estimates by survey are presented in Annex 2.

2.2.2.3 Species accounts

54. The species accounts text below originates from the Digital Video Aerial Surveys Two Year Report produced by baseline surveyor Hi-Def Aerial Surveying Limited (2021).

2.2.2.3.1 Red-throated diver

55. Red-throated divers were recorded across both wintering periods, with markedly high peaks in abundance in February 2020 and February 2021. Raw counts (the number of bird images recorded in the survey which were identified as red-throated divers) are included in Table 2.9. Birds were recorded as early as November and as late as April, although were present in very low numbers in these months.

56. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.17 (Table A1.17.1 and A1.17.2) and abundance and density per monthly survey in Annex 2, Section A2.17 (Table A2.17.1 and A2.17.1).

57. Distribution of red-throated divers for the complete survey period is presented in Annex 3, Figure 13.2.6 and Figure 13.2.7. In February 2020, birds were concentrated in high densities in the north and north-west of the survey area, away from the turbine proposal area (Annex 3, Figure 13.2.8). In January and February 2021, birds were mostly distributed to the north and west of the survey area (Annex 3, Figure 13.2.9). Only 2% of all birds were recorded flying, with most birds recorded sitting on the water.

Table 2.9 Number (raw count) of red-throated divers recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Red-throated diver	3	3	0	0	0	0	0	0	2	4	2	103	116
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Red-throated diver	10	0	0	0	0	0	0	0	0	3	6	42	61
Extended survey area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37	195	245
* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west).													

2.2.2.3.2 Gannet

58. Gannets *Morus bassanus* were recorded in moderate numbers year-round, with a peak in November 2019 – see Table 2.10 which includes the raw counts from each survey. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.7 (Table A1.7.1 and A1.7.2) and abundance and density per monthly survey in Annex 2, Section A2.7 (Table A2.7.1 and A2.7.2).

59. Birds were present throughout the survey area, in both the North Falls proposed site and buffer, however often distributed towards the south in many months (Annex 3, Figure 13.2.10, Figure 13.2.11). A reasonable proportion of birds, on average 60%, were recorded as flying.

60. Adults comprised 88% of aged birds, with the highest proportions of young birds recorded in late summer (Table 2.11).

Table 2.10 Number (raw count) of gannets recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Gannet	24	10	1	9	9	32	8	31	139	17	4	97	381
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Gannet	1	0	15	4	8	7	19	23	74	76	9	11	247
Extended Survey Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	11	247

* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west; based on 10% coverage for January).

Table 2.11 Summary of gannet ages between March 2019 to February 2021

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
26 March 2019	11	0	0	13	100%	24
5 April 2019	3	0	0	7	100%	10
11 May 2019	1	0	0	0	100%	1
6 June 2019	6	0	0	3	100%	9
1 July 2019	1	3	0	5	25%	9
28 August 2019	9	15	0	8	38%	32
10 September 2019	4	2	1	1	57%	8
5 October 2019	23	0	1	7	96%	31
6 November 2019	72	3	1	63	95%	139
23 December 2019	12	0	0	5	100%	17
18 January 2020	4	0	0	0	100%	4
14 February 2020	39	0	0	58	100%	97
11 March 2020	1	0	0	0	100%	1
09 April 2020	0	0	0	0	-	0
03 May 2020	11	0	0	4	100%	15
20 June 2020	2	0	0	2	100%	4
21 July 2020	4	2	0	2	67%	8
05 August 2020	1	4	1	1	17%	7

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
02 September 2020	14	2	0	3	88%	19
09 October 2020	11	2	0	5	75%	13
05 November 2020	54	1	0	19	100%	74
15 December 2020	23	2	0	51	92%	76
22 January 2021	7	0	0	2	100%	9
22 January 2021*	7	0	0	2	100%	~~3~~ 9
13 February	9	0	0	2	100%	11
13 February 2021*	9	0	0	2	100%	11
Total**	322	36	4	216	89%*	538*
*For extended survey area (based on 10% coverage in January) ** excluding extended survey area						

2.2.2.3.3 Kittiwake

61. Kittiwakes *Rissa tridactyla* were recorded year-round, with large peaks in abundance in March 2019, February 2020 and December 2020 (Table 2.12). There was no clear pattern on species density across the site as illustrated in Annex 3, Figure 13.2.12 and Figure 13.2.13. The highest densities of birds were recorded in the central survey area in June 2019, January 2020 and December 2020, likely overlapping with the operational Greater Gabbard Wind Farm. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.12 (Table A1.12.1 and A1.12.2) and abundance and density per monthly survey in Annex 2, Section A2.12 (Table A2.12.1 and A2.12.2).

62. Just over half (56%) of birds were recorded as flying with no discernible pattern to their flight direction. In February 2020, the large majority were flying south-west.

63. Adults comprised 89% of aged birds, with the highest numbers of young birds recorded in the spring (Table 2.13).

Table 2.12 Number (raw count) of kittiwakes recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Kittiwake	238	76	65	104	22	64	28	27	70	98	145	349	1286
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Kittiwake	45	27	38	35	40	22	8	6	60	214	123	141	759
Extended Survey Area*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	82	150	727

* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west). For January the count is based on 10% coverage.

Table 2.13 Summary of kittiwake ages between March 2019 to February 2021

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
26 March 2019	49	15	0	174	77%	238
5 April 2019	24	13	0	39	65%	76
11 May 2019	30	22	0	13	58%	65
6 June 2019	32	2	0	70	94%	104
1 July 2019	17	1	0	4	94%	22
28 August 2019	9	0	1	54	90%	64
10 September 2019	4	1	0	23	80%	28
5 October 2019	11	0	1	15	92%	27
6 November 2019	44	0	4	22	92%	70
23 December 2019	70	0	0	28	100%	98
18 January 2020	98	2	0	45	98%	145
14 February 2020	128	5	0	216	96%	349
11 March 2020	13	2	0	30	87%	45
09 April 2020	8	3	0	16	73%	27

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
03 May 2020	24	0	0	14	100%	38
20 June 2020	26	1	0	8	96%	35
21 July 2020	33	1	0	6	97%	40
05 August 2020	13	0	3	6	81%	22
02 September 2020	1	0	1	6	50%	8
09 October 2020	3	0	2	2	60%	6
05 November 2020	33	0	10	17	77%	60
15 December 2020	40	2	2	0	91%	44
22 January 2021	66	5	0	52	93%	123
22 January 2021*	50	3	0	2	94%	55
13 February 2021	109	1	0	23	93%	141
13 February 2021*	115	9	1	25	92%	150
Total**	885	82	25	883	89%	1875
* Extended survey area (based on 10% coverage for January) ** Excluding extended survey area						

2.2.2.3.4 Lesser black-backed gull

64. Monthly raw count data are included in Table 2.14 and numbers of aged birds per survey in Table 2.15. Lesser black-backed gulls were recorded in modest numbers throughout the year with notable peaks in June 2019 and April 2020. The majority of the birds in these peaks were recorded as sitting on the water, although overall a slight majority of birds (57%) were recorded as flying at other times of year. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.13 (Table A1.13.1 and A1.13.2) and abundance and density per monthly survey in Annex 2, Section A2.13 (Table A2.13.1 and A2.13.2). Most birds could not be distinguished as adults, immatures or juveniles and were recorded as 'unknown' (Table 2.15).

65. Birds were present across the survey area (Annex 3, Figure 13.2.14 and Figure 13.2.15). In the summer peak of June 2019, high densities were recorded in the central survey area, overlapping with the operational Greater Gabbard Wind Farm, whilst in April 2020 high densities were restricted to the south.

Table 2.14 Number (raw count) of lesser black-backed gulls recorded between March 2019 to February 2021

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Lesser black-backed gull	10	64	9	187	25	63	23	3	0	7	8	16	415
	Mar	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Lesser black-backed gull	5	124	28	69	16	11	4	4	3	2	7	3	276
Extended Survey Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4	6	275

* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west). For January the count is based on 10% coverage.

Table 2.15 Summary of lesser black-backed gull ages between March 2019 to February 2021

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
26 March 2019	7	3	0	0	70%	10
5 April 2019	16	1	0	47	94%	64
11 May 2019	4	4	0	1	50%	9
6 June 2019	20	20	0	147	50%	187
1 July 2019	9	4	0	12	69%	25
28 August 2019	8	0	0	55	100%	63
10 September 2019	3	1	2	17	50%	23
5 October 2019	0	3	0	0	0%	3
6 November 2019	0	0	0	0	-	0
23 December 2019	2	1	0	4	67%	7
18 January 2020	0	0	0	8	-	8
14 February 2020	12	0	0	4	100%	16
11 March 2020	3	1	0	1	75%	5
09 April 2020	8	0	0	116	100%	124
03 May 2020	19	8	0	1	70%	28
20 June 2020	43	4	0	22	91%	69

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
21 July 2020	14	0	0	2	100%	16
05 August 2020	6	0	0	5	100%	11
02 September 2020	1	0	0	3	100%	4
09 October 2020	0	0	0	4	-	4
05 November 2020	1	1	0	1	50%	3
15 December 2020	2	0	0	0	100%	2
22 January 2021	3	1	0	3	100%	7
22 January 2021*	1	0	0	3	100%	4
13 February 2021	2	1	0	0	67%	3
13 February 2021*	4	1	0	1	80%	6
Total**	183	53	2	453	77%	691
* Extended survey area (based on 10% coverage for January) ** Excluding extended survey area						

2.2.2.3.5 Guillemot

66. Guillemots *Uria aalge* were the most abundant species recorded during the survey period, particularly during the winter months (November – April). Peak numbers were recorded in February 2020 (Table 2.16). Most birds, including this peak, were recorded as sitting on the water (only 3% recorded flying) and all parts of the site were used, fairly equally – see Annex 3, Figure 13.2.16 and Figure 13.2.17.

67. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.10 (Table A1.10.1 and A1.10.2) and abundance and density per monthly survey in Annex 2, Section A2.10 (Table A2.10.1 and A2.10.2). Only one juvenile accompanying an adult was recorded throughout the entire survey period: in July 2020.

Table 2.16 Number of guillemots recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Guillemot	390	412	14	3	9	7	14	48	133	379	145	1504	3057
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Guillemot	48	81	62	18	12	5	13	10	52	363	468	134	1266
Extended Survey Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	298	164	1126
* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west, based on 10% coverage in January).													

2.2.2.3.6 Razorbill

68. Razorbills *Alca torda* were the second most abundant species (after guillemot) recorded during surveys, and present in greatest numbers during the winter months (October to April) with peaks in December 2019, February 2020 and December 2020 (Table 2.17). Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.16 (Table A1.16.1 and A1.16.2) and abundance and density per monthly survey in Annex 2, Section A2.16 (Table A2.16.1 and A2.16.2). Most birds were recorded as sitting on the water, only 3% were recorded as flying. All parts of the site were used fairly equally as shown in Annex 3, Figure 13.2.18 and Figure 13.2.19. No juveniles were recorded during the survey period.

Table 2.17 Number (raw count) of razorbills recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Razorbill	194	67	7	2	0	0	0	84	100	530	169	533	1686
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Razorbill	80	2	11	0	0	4	1	27	108	608	220	187	1248
Extended survey area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	126	208	1175
* For January and February 2021, counts are presented separately for the baseline survey area (OWF + 4km) and the extended survey area (OWF plus 12km buffer to the west, based on 10% coverage in January).													

2.2.2.3.7 Common tern

69. Common terns *Sterna hirundo* were recorded in the months o April, May, July and August (Table 2.18), with a peak in August 2019. Almost twice as many birds were recorded in Year 2 of the study compared to Year 1. Mean abundance and density estimates per survey month over the two-year survey period are included in Annex 1, Section A1.4 (Table A1.4.1 and A1.4.2) and abundance and density per monthly survey in Annex 2, Section A2.4 (Table A2.4.1 and Table A2.4.2).

70. During the two-year period the majority of birds (97%) were recorded as flying. The distribution of birds is shown in Annex 3, Figure 13.2.20 and Figure 13.2.21. A large proportion of recorded birds were adults (93%), with only two immature birds observed in August 2019 (Table 2.19).

Table 2.18 Number (raw count) of common terns recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Common tern	0	0	0	0	2	10	0	0	0	0	0	0	12
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Year 2 Total**
Common tern	0	7	7	0	0	1	5	0	0	0	0	0	20

Table 2.19 Summary of common tern ages between March 2019 to February 2021

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
26 March 2019	0	0	0	0	0%	0
5 April 2019	0	0	0	0	0%	0
11 May 2019	0	0	0	0	0%	0
6 June 2019	0	0	0	0	0%	0
1 July 2019	0	0	0	2	0%	2
28 August 2019	5	2	0	3	71%	10
10 September 2019	0	0	0	0	0%	0
5 October 2019	0	0	0	0	0%	0
6 November 2019	0	0	0	0	0%	0
23 December 2019	0	0	0	0	0%	0
18 January 2020	0	0	0	0	0%	0
14 February 2020	0	0	0	0	0%	0
11 March 2020	0	0	0	0	0%	0
09 April 2020	7	0	0	0	0%	7
03 May 2020	2	0	0	5	100%	7
20 June 2020	0	0	0	0	0%	0
21 July 2020	0	0	0	0	0%	0
05 August 2020	1	0	0	0	100%	1
02 September 2020	0	0	0	5	0%	5
09 October 2020	0	0	0	0	0%	0
05 November 2020	0	0	0	0	0%	0

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
15 December 2020	0	0	0	0	0%	0
22 January 2021	0	0	0	0	0%	0
13 February 2021	0	0	0	0	0%	0
Total	15	2	0	15	93%	32

2.2.2.3.8 Partially identified Arctic / common terns (commic terns)

71. Partially identified Arctic (*Sterna paradisaea*) and common terns were recorded intermittently during the study, with no observations recorded between October and February in both years (Table 2.20). Observations of commic terns peaked in April 2020 and September 2019. Similar numbers of commic terns were recorded in both study years.

72. During the two-year period the majority of birds (85%) were recorded as flying, with most birds recorded in the west of the study area (Annex 3, Figure 13.2.22 and Figure 13.2.23). Birds were distributed to the south of the study area in August 2019. Throughout the 24-month period, no immature or juvenile birds were recorded (Table 2.21).

Table 2.20 Number (raw count) of partially identified Arctic / common terns recorded between March 2019 to February 2021

2019/20	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Arctic / common tern	0	0	6	0	1	4	13	0	0	0	0	0	24
2020/21	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Year 2 Total**
Arctic / common tern	0	16	1	0	0	2	1	0	0	0	0	0	20

Table 2.21 Summary of partially identified Arctic / common tern ages between March 2019 to February 2021

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
26 March 2019	0	0	0	0	0%	0
5 April 2019	0	0	0	0	0%	0
11 May 2019	0	0	0	6	0%	6
6 June 2019	0	0	0	0	0%	0
1 July 2019	0	0	0	1	0%	1
28 August 2019	0	0	0	4	0%	4
10 September 2019	2	0	0	11	100%	13
5 October 2019	0	0	0	0	0%	0
6 November 2019	0	0	0	0	0%	0

Survey date	Number recorded as adult	Number recorded as immature	Number recorded as juvenile	Number recorded as unknown	% Adults	Total
23 December 2019	0	0	0	0	0%	0
18 January 2020	0	0	0	0	0%	0
14 February 2020	0	0	0	0	0%	0
11 March 2020	0	0	0	0	0%	0
09 April 2020	1	0	0	15	100%	16
03 May 2020	0	0	0	1	0%	1
20 June 2020	0	0	0	0	0%	0
21 July 2020	0	0	0	0	0%	0
05 August 2020	2	0	0	0	100%	2
02 September 2020	1	0	0	0	100%	1
09 October 2020	0	0	0	0	0%	0
05 November 2020	0	0	0	0	0%	0
15 December 2020	0	0	0	0	0%	0
22 January 2021	0	0	0	0	0%	0
13 February 2021	0	0	0	0	0%	0
Total	6	0	0	38	100%	44

2.2.2.3.9 Less abundant bird species

73. Less abundant bird species were recorded sporadically throughout the year. Raw totals of less abundant bird species detected on each survey are shown in Table 2.22. Species recorded are listed in Table 2.23.

74. Great black-backed gulls *Larus marinus* were recorded in moderate to low numbers from late summer through to winter. Birds were generally found in the west buffer and within the operational Greater Gabbard and Galloper Wind Farms. Herring gulls Larus argentatus were present in very low numbers, with a slight increase in June 2019. An influx of common gulls Larus canus was recorded in April 2020.

75. Despite being listed as a qualifying feature at the Alde-Ore Estuary SPA, Sandwich tern were recorded in very low numbers.

76. Annex 3, Figures 13.2.24 and 13.2.25 show detections and distribution of less abundant bird species in the study area over the 24-month survey period.

Table 2.22 Number of less abundant bird species recorded between March 2019 to February 2021

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Year 1 Total
Less abundant bird species	36	25	27	32	5	18	8	61	80	7	16	33	336
	Mar	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan***	**Feb***	**Year 2 Total**
Less abundant bird species	4	133	36	2	22	4	11	92	26	34	34	18	383

* Extended survey area

Table 2.23 List of less abundant bird species recorded between March 2019 and February 2021

Species	Scientific name
Brent goose	*Branta bernicla*
Common shelduck	*Tadorna tadorna*
Eurasian wigeon	*Mareca penelope*
Fulmar	*Fulmarus glacialis*
Great cormorant	*Phalacrocorax carbo*
Osprey	*Pandion heliaetus*
Eurasian sparrowhawk	*Accipiter nisus*
Peregrine	*Falco peregrinus*
Whimbrel	*Numenius phaeopus*
Great skua	*Stercorarius skua*
Little gull	*Hydocoloeus minutus*
Black-headed gull	*Chroicocephalus ridibundus*
Common gull	*Larus canus*
Herring gull	*Larus argentatus*
Great black-backed gull	*Larus marinus*
Sandwich tern	*Thalasseus sandvicensis*
Atlantic puffin	*Fratercula arctica*
Feral pigeon	*Columba livia domestica*
Carrion crow	*Corvus corone*
Starling	*Sturnus vulgaris*
Fieldfare	*Turdus pilaris*
Chaffinch	*Fringilla coelebs*

3 Collision risk modelling

3.1 Standard model

3.1.1 Methods and input parameters

77. The 'standard' collision risk model (CRM) is that applied to density estimates from baseline surveys for seabird species flying within the offshore wind farm (OWF) site footprint (as opposed to the Migratory Species Model described in the next section). Two standard models are available, the deterministic Band (2012) model and the stochastic (McGregor et al. 2018) model. Based on advice from Natural England, the avian stochastic model (sCRM) was used (Option 2, using the industry standard generic data set for flight height (Johnston et al. 2014a, 2014b)).

    The sCRM allows for incorporation of variability in the input parameters. In running sCRM, measures of variability were incorporated for the following parameters:

    - Seabird flight density: mean and upper and lower 95% confidence limits (CLs) entered into sCRM, calculated using bootstrap samples as recommended by Natural England (2023b);
    - Avoidance rates ± SD entered into sCRM (based on Natural England (2022b) interim advice and updates from the in-preparation SNCB CRM guidance note provided by email on 13 September 2023; the only change in the latter being that avoidance rates are expressed to four decimal places rather than three);
    - Seabird biometrics and flight speed: standard deviations (SDs) entered as per advice from Natural England as described above (for some species the sCRM has pre-loaded biometric SDs, although these are not always the same as the Natural England advice (2022a,b) (where there was a difference, the latter references were used);
    - Nocturnal activity factors (NAFs, the level of nocturnal flight activity, expressed in relation to daytime flight activity levels) for gannet, as per Natural England advice); and
    - Proportions at collision risk height based on Johnston *et al.* 2014a, 2014b.

78. Further background on sCRM, avoidance rates and NAFs is given in ES Chapter 13 Offshore Ornithology (Section 13.6.2.2.2) (Document Reference: 3.3.15).

79. Bird parameters for sCRM are tabulated below as follows: monthly mean densities of birds in flight (with lower (LCL) and upper (UCL) 95% CLs and SD) are included in Table 3.1 through Table 3.11; avoidance rates, species biometrics, flight characteristics and nocturnal activity factors used in the model are shown in Table 3.12.

80. As per Natural England's suggestion in the PEIR feedback, Standard Deviations (SDs) and Confidence Limits (CLs) for the mean monthly flight density estimates within the array boundary were calculated as follows. For each month, the bootstrap values from the two relevant baseline surveys were

combined (1000 datapoints from each month = 2000 bootstraps total). These values were then sorted into numerical order, smallest to largest, and then the mean, SD and CL's were calculated from that combined dataset. Where species were not recorded in a survey, 1000 zero values were used for the bootstrap data for that survey.

81. Wind farm parameters for CRM are included in Table 3.13 and Table 3.14. Two scenarios are presented, a minimum (turbine size) scenario with smaller turbines and a maximum scenario of fewer, larger turbines. The turbine parameters given are not based on any specific model but are indicative values based on models anticipated to be available in the future.

82. Further detailed notes on the use of sCRM are as follows:

- The probability distributions option was selected for rotation speed and blade pitch;
- The default standard of 50% upwind flights was used;
- Originally, truncated normal was selected for distribution of monthly bird densities; However, upon the advice of Natural England (2023b) CRM's for key species were re-run using the distribution sample method, that allowed for means and CL's to be used from bootstrap samples; and
- The large array option was not selected (test runs were made using of sCRM with large array correction on and off (all other parameters the same) and no apparent consistent difference was found).

Table 3.1 Black-headed gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0.07	0	0	0	0.07	0	0	0.06	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0.2	0	0	0	0.19	0	0	0.2	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0.07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0.2										
Monthly statistics												
Mean	0	0.033	0.035	0	0	0	0.034	0	0	0.032	0	0
SD	0	0.054	0.056	0	0	0	0.052	0	0	0.055	0	0
LCL	0	0	0	0	0	0	0.000	0	0	0	0	0
UCL	0	0.185	0.192	0	0	0	0.176	0	0	0.192	0	0

Table 3.2 Common gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0	0	0	0	0	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0.07	0	0.21	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.19	0	0.61	0	0	0	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0.07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0.17										
Monthly statistics												
Mean	0	0.068	0	0.107	0	0	0	0	0	0	0	0
SD	0	0.053	0	0.172	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.180	0	0.581	0	0	0	0	0	0	0	0

Table 3.3 Common tern: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0	0	0	0	0.14	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0.4	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0	0	0	0	0.07	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0.2	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										
Monthly statistics												
Mean	0	0	0	0	0	0	0	0.105	0	0	0	0
SD	0	0	0	0	0	0	0	0.104	0	0	0	0
LCL	0	0	0	0	0	0	0	0.000	0	0	0	0
UCL	0	0	0	0	0	0	0	0.384	0	0	0	0

Table 3.4 Fulmar: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0.07	0	0	0	0	0	0	0.07	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0.17	0	0	0	0	0	0	0.19	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0.07	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0.17	0	0	0	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										
Monthly statistics												
Mean	0	0	0.034	0.033	0	0	0	0	0	0.034	0	0
SD	0	0	0.049	0.048	0	0	0	0	0	0.052	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0.135	0.135	0	0	0	0	0	0.172	0	0

Table 3.5 Gannet: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0.07	0	0	0.07	0.14	0.07	0	0.28	0.55	0
LCL			0	0	0	0	0	0	0	0	0.26	0
UCL			0.19	0	0	0.2	0.4	0.21	0	0.61	0.87	0
Calendar year 2 (2020)												
Mean	0	0.61	0	0	0	0.07	0	0	0.07	0.14	0.63	0.06
LCL	0	0	0	0	0	0	0	0	0	0	0.21	0
UCL	0	1.44	0	0	0	0.2	0	0	0.2	0.27	1.16	0.19
Calendar year 3 (2021)												
Mean	0.14	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0.41	0										
Monthly statistics												
Mean	0.072	0.306	0.034	0	0	0.070	0.069	0.035	0.035	0.210	0.592	0.029
SD	0.119	0.409	0.053	0	0	0.063	0.112	0.058	0.055	0.142	0.216	0.053
LCL	0	0	0	0	0	0	0	0	0	0	0.232	0
UCL	0.397	1.303	0.174	0	0	0.201	0.384	0.193	0.185	0.579	1.086	0.182

Table 3.6 Great black-backed gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0.13	0	0	0	0	0.07	0.07	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0.33	0	0	0	0	0.2	0.2	0	0
Calendar year 2 (2020)												
Mean	0	0.07	0	0	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.2	0	0	0	0	0	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0.07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0.19										
Monthly statistics												
Mean	0	0.066	0	0.066	0	0	0	0	0.036	0.033	0	0
SD	0	0.057	0	0.095	0	0	0	0	0.058	0.054	0	0
LCL	0	0.000	0	0.000	0	0	0	0	0	0	0	0
UCL	0	0.193	0	0.266	0	0	0	0	0.193	0.181	0	0

Table 3.7 Herring gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0	0	0	0	0	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0.07	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0.19	0	0	0	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										
Monthly statistics												
Mean	0	0	0	0.034	0	0	0	0	0	0	0	0
SD	0	0	0	0.051	0	0	0	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0.168	0	0	0	0	0	0	0	0

Table 3.8 Kittiwake: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	1.25	0.27	0.75	0.41	0	0.07	0	0	0.4	0.67
LCL			0.78	0.06	0.42	0.12	0	0	0	0	0.11	0.16
UCL			1.66	0.46	1.06	0.73	0	0.2	0	0	0.79	1.36
Calendar year 2 (2020)												
Mean	1.07	2.56	0.13	0	0	0.2	0.48	0.14	0.07	0	0.56	0.13
LCL	0.49	0.12	0	0	0	0.06	0.07	0	0	0	0.13	0
UCL	1.92	6.84	0.26	0	0	0.39	1.01	0.26	0.19	0	0.97	0.28
Calendar year 3 (2021)												
Mean	0.42	0.13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0.17	0										
UCL	0.77	0.23										
Monthly statistics												
Mean	0.745	1.343	0.689	0.136	0.375	0.307	0.238	0.103	0.034	0	0.482	0.398
SD	0.438	1.851	0.583	0.154	0.392	0.166	0.290	0.071	0.052	0	0.212	0.355
LCL	0.191	0.057	0	0	0	0.062	0	0	0	0	0.115	0
UCL	1.752	6.193	1.610	0.439	1.012	0.653	0.906	0.247	0.174	0	0.924	1.217

Table 3.9 Lesser black-backed gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0.27	0	0.41	0.07	0	0.14	0	0	0
LCL			0	0.05	0	0.12	0	0	0	0	0	0
UCL			0	0.61	0	0.81	0.23	0	0.5	0	0	0
Calendar year 2 (2020)												
Mean	0	0.27	0	0	0.07	0.2	0.07	0	0	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.66	0	0	0.23	0.51	0.17	0	0	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										
Monthly statistics												
Mean	0	0.137	0	0.136	0.033	0.305	0.066	0	0.071	0	0	0
SD	0	0.181	0	0.173	0.060	0.193	0.058	0	0.126	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.575	0	0.548	0.197	0.726	0.197	0	0.411	0	0	0

Table 3.10 Little gull: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0	0	0	0	0	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0	0	0	0	0	0	0	0.07	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0	0	0	0.2	0
Calendar year 3 (2021)												
Mean	0	0.13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0.34										
Monthly statistics												
Mean	0	0.067	0	0	0	0	0	0	0	0	0.034	0
SD	0	0.097	0	0	0	0	0	0	0	0	0.056	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0.313	0	0	0	0	0	0	0	0	0.192	0

Table 3.11 Sandwich tern: monthly flight densities (birds per km2) within the OWF Site (means with lower (LCL) and upper (UCL) 95% CLs and SD for sCRM

Year / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	NS	NS	0	0	0	0	0	0	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0	0	0	0	0	0.14	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0	0.41	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										
Monthly statistics												
Mean	0	0	0	0	0	0	0	0	0.068	0	0	0
SD	0	0	0	0	0	0	0	0	0.111	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0	0.383	0	0	0

Table 3.12 Avoidance rates, species biometrics, flight parameters and nocturnal activity factors used in stochastic collision risk modelling (see Notes for sources).

Species	Macro-avoidance	Avoidance rate (AR)	AR Standard Deviation (SD)	Body length (SD) m	Wing-span (SD) m	Flight speed (SD) m/s	% flights upwind	Flight type	Nocturnal activity factor (SD)
Black-headed gull[1]	n/a	0.9949	±0.0002	0.37 (0)	1.10 (0)	11.9 (0)	50	Flapping	50%
Common gull[2]	n/a	0.9949	±0.0002	0.41 (0.005)	1.2 (0.05)	13.4 (0)	50	Flapping	50%
Common tern[2]	n/a	0.9907	±0.0004	0.33 (0.01)	0.88 (0.0525)	10.9 (0)	50	Flapping	0%
Fulmar[2]	n/a	0.9907	±0.0004	0.45 (0.025)	1.07 (0.025)	13.0 (0)	50	Flapping	75%
Gannet	70%	0.9928	±0.0003	0.94 (0.0325)	1.72 (0.0375)	14.9 (0)	50	Flapping	0.08 (0.10)
Great black-backed gull	n/a	0.9939	±0.0004	0.71 (0.035)	1.58 (0.0375)	13.7 (1.20)	50	Flapping	0.375 (0.0637)
Herring gull	n/a	0.9939	±0.0004	0.6 (0.0225)	1.44 (0.03)	12.8 (1.80)	50	Flapping	0.375 (0.0637)
Kittiwake	n/a	0.9928	±0.0003	0.39 (0.005)	1.08 (0.0625)	13.1 (0.40)	50	Flapping	0.375 (0.0637)
Lesser black-backed gull	n/a	0.9939	±0.0004	0.58 (0.03)	1.42 (0.0375)	13.1 (1.90)	50	Flapping	0.375 (0.0637)
Little gull[3]	n/a	0.9907	±0.0004	0.26 (0.005)	0.78 (0.0125)	11.5 (0)	50	Flapping	0.375 (0.0637)
Sandwich tern	n/a	0.9907	±0.0004	0.38 (0.005)	1.00 (0.04)	10.3 (3.4)	50	Flapping	0%

Notes

Overall source NE (2022b) interim advice on updated CRM parameters, updated September 2023. Additional sources: 1. MacArthur Green (2019) Appendix 1 Table 5; 2. Pre-loaded species parameters within Avian Stochastic CRM shiny app (McGregor *et al.* 2018); 3. Natural England (2022a) Phase III Best Practice Guidance for Offshore Wind Farm Environmental Assessment Table 14.4 'Bird parameters'

Table 3.13 Operational time, wind availability and downtime for collision risk modelling (source Project Design Spreadsheet)

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind availability[1]	91.0%	90.1%	88.7%	86.0%	86.6%	83.0%	84.0%	86.4%	88.0%	91.2%	92.9%	91.6%
Mean downtime[2]	1.8%	1.7%	1.6%	2.5%	2.4%	2.5%	2.9%	2.0%	1.5%	1.6%	1.7%	1.7%
Proportion of time operational[3]	89 %	89 %	87 %	84 %	85 %	81 %	82 %	85 %	87 %	90 %	91 %	90 %

1. Proportion of month that the wind is above 4m/s and below 25m/s; indicative estimates based on historic trends. The cut-in and cut-out values are typical but may vary for future wind turbine technology.

2. This is the inverse of the technical availability; estimates based on a simplified O&M model. Values are indicative and may vary depending on operating philosophy.

3. Wind availability x technical availability

Table 3.14 Wind farm parameters for collision risk modelling (source Project Design Spreadsheet)

Parameter	Minimum Rotor Diameter (MiRD)	Maximum Rotor Diameter (MaRD)
Number of turbines	57	34
Number of blades	3	3
Max. blade width (m)	5.2	10.5
Average blade pitch (deg)	4.146	4.146
Rotor diameter (m)	236	337
Rotor radius (m)	118	168.5
Rotation speed (RPM)	8.4	7.5
Hub height above HAT (m)	144.6	195.1
Air gap above HAT (m)	26.61	
Tidal offset (HAT-MSL) (m)	1.93	
Latitude[1] (deg N)	51.71	
Wind farm width[2] (km)	11.02	

HAT = Highest astrological tide, MSL = mean sea level

1. At the central point

2. The width is calculated as the diameter of a circle with the same area as the OWF site (for North Falls 95.41km^2.

3.1.2 Results

83. Species specific results from the sCRM are presented in Table 3.15 through Table 3.36 below. In each case Tables include monthly collision risk estimates comprising the mean, SD (standard deviation), CV (coefficient of variation), median and 2.5%, 25%, 75% and 97.5% confidence limits.

Table 3.15 Black-headed Gull - predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.146	0.173	0	0	0	0.167	0	0	0.172	0	0	0.659
SD	0	0.146	0.164	0	0	0	0.166	0	0	0.176	0	0	0.475
CV	NaN	0.999	0.949	NaN	NaN	NaN	0.992	NaN	NaN	1.023	NaN	NaN	0.721
Median	0	0.106	0.128	0	0	0	0.116	0	0	0.118	0	0	0.532
2.5%	0	0.006	0.006	0	0	0	0.007	0	0	0.006	0	0	0.145
25%	0	0.05	0.06	0	0	0	0.057	0	0	0.057	0	0	0.344
75%	0	0.191	0.236	0	0	0	0.224	0	0	0.231	0	0	0.829
97.5%	0	0.54	0.656	0	0	0	0.647	0	0	0.611	0	0	1.891

Table 3.16 Black-headed Gull - predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.157	0.192	0	0	0	0.191	0	0	0.186	0	0	0.725
SD	0	0.152	0.18	0	0	0	0.175	0	0	0.184	0	0	0.493
CV	NaN	0.97	0.938	NaN	NaN	NaN	0.918	NaN	NaN	0.989	NaN	NaN	0.68
Median	0	0.109	0.14	0	0	0	0.137	0	0	0.131	0	0	0.593
2.5%	0	0.006	0.01	0	0	0	0.008	0	0	0.009	0	0	0.145
25%	0	0.052	0.068	0	0	0	0.072	0	0	0.059	0	0	0.374
75%	0	0.206	0.256	0	0	0	0.251	0	0	0.242	0	0	0.945
97.5%	0	0.585	0.681	0	0	0	0.673	0	0	0.671	0	0	2.002

Table 3.17 Common Gull - predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.449	0	1.241	0	0	0	0	0	0	0	0	1.689
SD	0	0.264	0	0.859	0	0	0	0	0	0	0	0	0.912
CV	NaN	0.588	NaN	0.692	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.54
Median	0	0.423	0	1.071	0	0	0	0	0	0	0	0	1.529
2.5%	0	0.038	0	0.06	0	0	0	0	0	0	0	0	0.376
25%	0	0.249	0	0.596	0	0	0	0	0	0	0	0	1.011
75%	0	0.624	0	1.736	0	0	0	0	0	0	0	0	2.226
97.5%	0	1.022	0	3.303	0	0	0	0	0	0	0	0	3.896

Table 3.18 Common Gull - predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.464	0	1.211	0	0	0	0	0	0	0	0	1.675
SD	0	0.277	0	0.89	0	0	0	0	0	0	0	0	0.937
CV	NaN	0.596	NaN	0.735	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.559
Median	0	0.431	0	1.041	0	0	0	0	0	0	0	0	1.5
2.5%	0	0.041	0	0.085	0	0	0	0	0	0	0	0	0.377
25%	0	0.245	0	0.518	0	0	0	0	0	0	0	0	0.968
75%	0	0.655	0	1.709	0	0	0	0	0	0	0	0	2.191
97.5%	0	1.079	0	3.374	0	0	0	0	0	0	0	0	3.935

Table 3.19 Common Tern - predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0	0	0	0	0.186	0	0	0	0	0.186
SD	0	0	0	0	0	0	0	0.13	0	0	0	0	0.13
CV	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.697	NaN	NaN	NaN	NaN	0.697
Median	0	0	0	0	0	0	0	0.162	0	0	0	0	0.162
2.5%	0	0	0	0	0	0	0	0.01	0	0	0	0	0.01
25%	0	0	0	0	0	0	0	0.086	0	0	0	0	0.086
75%	0	0	0	0	0	0	0	0.26	0	0	0	0	0.26
97.5%	0	0	0	0	0	0	0	0.477	0	0	0	0	0.477

Table 3.20 Common Tern - predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0	0	0	0	0.214	0	0	0	0	0.214
SD	0	0	0	0	0	0	0	0.159	0	0	0	0	0.159
CV	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.742	NaN	NaN	NaN	NaN	0.742
Median	0	0	0	0	0	0	0	0.181	0	0	0	0	0.181
2.5%	0	0	0	0	0	0	0	0.013	0	0	0	0	0.013
25%	0	0	0	0	0	0	0	0.098	0	0	0	0	0.098
75%	0	0	0	0	0	0	0	0.291	0	0	0	0	0.291
97.5%	0	0	0	0	0	0	0	0.595	0	0	0	0	0.595

Table 3.21 Fulmar–- predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0.045	0.04	0	0	0	0	0	0.044	0	0	0.128
SD	0	0	0.083	0.074	0	0	0	0	0	0.081	0	0	0.206
CV	NaN	NaN	1.866	1.85	NaN	NaN	NaN	NaN	NaN	1.847	NaN	NaN	1.599
Median	0	0	0.004	0.003	0	0	0	0	0	0.004	0	0	0.019
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	0
25%	0	0	0	0	0	0	0	0	0	0	0	0	0
75%	0	0	0.054	0.047	0	0	0	0	0	0.051	0	0	0.202
97.5%	0	0	0.29	0.262	0	0	0	0	0	0.307	0	0	0.655

Table 3.22 Fulmar–- predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0.046	0.043	0	0	0	0	0	0.051	0	0	0.14
SD	0	0	0.085	0.079	0	0	0	0	0	0.096	0	0	0.227
CV	NaN	NaN	1.844	1.833	NaN	NaN	NaN	NaN	NaN	1.879	NaN	NaN	1.615
Median	0	0	0.004	0.004	0	0	0	0	0	0.004	0	0	0.021
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	0
25%	0	0	0	0	0	0	0	0	0	0	0	0	0
75%	0	0	0.055	0.048	0	0	0	0	0	0.055	0	0	0.214
97.5%	0	0	0.301	0.294	0	0	0	0	0	0.354	0	0	0.775

Table 3.23 Gannet – predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0.122	0.471	0.074	0	0	0.129	0.195	0.091	0.076	0.28	0.609	0.05	2.097
SD	0.11	0.413	0.066	0	0	0.1	0.167	0.076	0.064	0.207	0.386	0.046	1.108
CV	0.901	0.877	0.893	NaN	NaN	0.776	0.856	0.841	0.849	0.737	0.634	0.91	0.529
Median	0.089	0.358	0.055	0	0	0.104	0.148	0.071	0.057	0.233	0.543	0.038	1.91
2.5%	0.005	0.021	0.003	0	0	0.007	0.009	0.004	0.003	0.021	0.107	0.002	0.585
25%	0.041	0.186	0.025	0	0	0.053	0.071	0.033	0.028	0.124	0.317	0.017	1.248
75%	0.17	0.636	0.101	0	0	0.182	0.264	0.129	0.107	0.39	0.788	0.07	2.711
97.5%	0.416	1.527	0.247	0	0	0.364	0.646	0.281	0.24	0.78	1.565	0.169	4.786

Table 3.24 Gannet – predicted collisions per month, Stochastic CRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0.121	0.443	0.075	0	0	0.132	0.179	0.091	0.076	0.269	0.582	0.049	2.015
SD	0.107	0.374	0.065	0	0	0.101	0.157	0.081	0.063	0.204	0.343	0.042	1.01
CV	0.883	0.845	0.87	NaN	NaN	0.764	0.881	0.893	0.833	0.761	0.59	0.858	0.501
Median	0.092	0.343	0.055	0	0	0.106	0.133	0.067	0.057	0.216	0.523	0.037	1.838
2.5%	0.004	0.019	0.003	0	0	0.008	0.009	0.003	0.004	0.02	0.127	0.002	0.587
25%	0.045	0.169	0.028	0	0	0.054	0.067	0.032	0.029	0.116	0.324	0.019	1.239
75%	0.168	0.626	0.104	0	0	0.189	0.251	0.129	0.108	0.374	0.754	0.068	2.625
97.5%	0.397	1.416	0.248	0	0	0.384	0.561	0.318	0.231	0.78	1.414	0.153	4.289

Table 3.25 Great Black-backed Gull–- predicted collisions per month, sCRM, Option 2 – MiRD – using distribution samples

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.862	0	1.063	0	0	0	0	0.543	0.573	0	0	4.612
SD	0	0.794	0	1.528	0	0	0	0	0.924	0.909	0	0	1.733
CV	NaN	0.922	NaN	1.437	NaN	NaN	NaN	NaN	1.702	1.586	NaN	NaN	0.376
Median	0	0.78	0	0	0	0	0	0	0	0	0	0	4.377
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	1.831
25%	0	0	0	0	0	0	0	0	0	0	0	0	3.371
75%	0	1.35	0	1.915	0	0	0	0	0.949	0.948	0	0	5.643
97.5%	0	2.759	0	4.817	0	0	0	0	2.897	3.055	0	0	8.605

Table 3.26 Great Black-backed Gull–- predicted collisions per month, sCRM, Option 2 – MaRD – using distribution samples

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.854	0	1.085	0	0	0	0	0.567	0.514	0	0	4.487
SD	0	0.788	0	1.561	0	0	0	0	0.958	0.868	0	0	1.706
CV	NaN	0.923	NaN	1.439	NaN	NaN	NaN	NaN	1.691	1.689	NaN	NaN	0.38
Median	0	0.794	0	0	0	0	0	0	0	0	0	0	4.317
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	1.832
25%	0	0	0	0	0	0	0	0	0	0	0	0	3.274
75%	0	1.435	0	2.055	0	0	0	0	0.974	0.906	0	0	5.468
97.5%	0	2.643	0	4.924	0	0	0	0	2.979	2.836	0	0	8.335

Table 3.27 Herring Gull - predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0.688	0	0	0	0	0	0	0	0	0.688
SD	0	0	0	0.508	0	0	0	0	0	0	0	0	0.508
CV	NaN	NaN	NaN	0.739	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.739
Median	0	0	0	0.59	0	0	0	0	0	0	0	0	0.59
2.5%	0	0	0	0.031	0	0	0	0	0	0	0	0	0.031
25%	0	0	0	0.295	0	0	0	0	0	0	0	0	0.295
75%	0	0	0	0.948	0	0	0	0	0	0	0	0	0.948
97.5%	0	0	0	1.947	0	0	0	0	0	0	0	0	1.947

Table 3.28 Herring Gull - predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0.703	0	0	0	0	0	0	0	0	0.703
SD	0	0	0	0.494	0	0	0	0	0	0	0	0	0.494
CV	NaN	NaN	NaN	0.702	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.702
Median	0	0	0	0.638	0	0	0	0	0	0	0	0	0.638
2.5%	0	0	0	0.042	0	0	0	0	0	0	0	0	0.042
25%	0	0	0	0.316	0	0	0	0	0	0	0	0	0.316
75%	0	0	0	0.975	0	0	0	0	0	0	0	0	0.975
97.5%	0	0	0	1.862	0	0	0	0	0	0	0	0	1.862

Table 3.29 Kittiwake - predicted collisions per month, sCRM, Option 2 – MiRD – Using distribution samples method

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	2.694	4.926	2.816	0.572	1.811	1.319	1.15	0.458	0.135	0	1.798	1.485	19.163
SD	1.67	6.875	2.536	0.674	1.857	0.751	1.4	0.327	0.223	0	0.877	1.38	8.572
CV	0.62	1.396	0.901	1.178	1.025	0.569	1.218	0.714	1.654	NaN	0.488	0.929	0.447
Median	2.256	0.669	1.105	0	2.047	1.178	0.491	0.427	0	0	1.709	0.852	17.462
2.5%	0.66	0.185	0.19	0	0	0.269	0	0	0	0	0.394	0	7.387
25%	1.418	0.46	0.517	0	0	0.746	0	0.253	0	0	1.147	0.427	13.036
75%	3.616	8.392	5.183	1.104	3.42	1.767	2.084	0.666	0.257	0	2.371	2.41	23.381
97.5%	6.935	22.999	7.475	2.063	5.118	3.093	4.482	1.133	0.77	0	3.764	4.766	39.341

Table 3.30 Kittiwake - predicted collisions per month, sCRM, Option 2 – MaRD – Using distribution samples method

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	2.87	4.958	3.07	0.605	1.936	1.452	1.204	0.496	0.159	0	1.91	1.575	20.235
SD	1.734	7.31	2.673	0.708	1.993	0.835	1.518	0.363	0.239	0	0.911	1.479	9.099
CV	0.604	1.474	0.871	1.17	1.029	0.575	1.262	0.732	1.504	NaN	0.477	0.939	0.45
Median	2.405	0.7	1.451	0	2.124	1.301	0	0.473	0	0	1.815	0.926	18.37
2.5%	0.752	0.186	0.2	0	0	0.253	0	0	0	0	0.48	0	7.368
25%	1.53	0.466	0.596	0	0	0.851	0	0.262	0	0	1.201	0.472	13.736
75%	3.85	8.865	5.477	1.157	3.746	1.946	2.252	0.728	0.291	0	2.487	2.434	24.815
97.5%	6.895	23.539	7.856	2.147	5.246	3.362	4.685	1.263	0.789	0	3.874	5.192	43.593

Table 3.31 Lesser Black-backed Gull - predicted collisions per month, sCRM, Option 2 – MiRD – Using distribution samples method

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	1.318	0	1.588	0.409	3.626	0.788	0	0.802	0	0	0	10.782
SD	0	1.791	0	2.066	0.766	2.643	0.752	0	1.436	0	0	0	4.486
CV	NaN	1.359	NaN	1.301	1.873	0.729	0.954	NaN	1.791	NaN	NaN	NaN	0.416
Median	0	0	0	0.622	0	3.233	0.691	0	0	0	0	0	10.072
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	4.245
25%	0	0	0	0	0	1.886	0	0	0	0	0	0	7.51
75%	0	2.259	0	2.869	0.686	4.879	1.163	0	1.305	0	0	0	13.089
97.5%	0	5.84	0	7.079	2.406	10.036	2.493	0	4.728	0	0	0	21.222

Table 3.32 Lesser Black-backed Gull - predicted collisions per month, sCRM, Option 2 – MaRD – Using distribution samples method

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	1.226	0	1.551	0.408	3.712	0.849	0	0.802	0	0	0	10.935
SD	0	1.78	0	2.078	0.725	2.673	0.813	0	1.49	0	0	0	4.983
CV	NaN	1.452	NaN	1.34	1.777	0.72	0.958	NaN	1.858	NaN	NaN	NaN	0.456
Median	0	0	0	0.519	0	3.214	0.726	0	0	0	0	0	10.108
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	4.343
25%	0	0	0	0	0	1.906	0	0	0	0	0	0	7.567
75%	0	2.136	0	2.736	0.698	5.07	1.215	0	1.21	0	0	0	13.319
97.5%	0	5.752	0	6.697	2.528	10.184	2.815	0	5.277	0	0	0	22.916

Table 3.33 Little Gull - predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.954	0	0	0	0	0	0	0	0	0.588	0	1.541
SD	0	3.431	0	0	0	0	0	0	0	0	2.184	0	5.084
CV	NaN	3.597	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	3.715	NaN	3.298
Median	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	0
25%	0	0	0	0	0	0	0	0	0	0	0	0	0
75%	0	0	0	0	0	0	0	0	0	0	0	0	0
97.5%	0	12.915	0	0	0	0	0	0	0	0	7.894	0	20.48

Table 3.34 Little Gull - predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0.697	0	0	0	0	0	0	0	0	0.316	0	1.013
SD	0	3.305	0	0	0	0	0	0	0	0	1.657	0	4.59
CV	NaN	4.741	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	5.249	NaN	4.532
Median	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5%	0	0	0	0	0	0	0	0	0	0	0	0	0
25%	0	0	0	0	0	0	0	0	0	0	0	0	0
75%	0	0	0	0	0	0	0	0	0	0	0	0	0
97.5%	0	8.858	0	0	0	0	0	0	0	0	3.705	0	15.543

Table 3.35 Sandwich Tern–- predicted collisions per month, sCRM, Option 2 – MiRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0	0	0	0	0	0.24	0	0	0	0.24
SD	0	0	0	0	0	0	0	0	0.23	0	0	0	0.23
CV	0	0	0	0	0	0	0	0	0.957	0	0	0	0.957
Median	0	0	0	0	0	0	0	0	0.18	0	0	0	0.18
2.5%	0	0	0	0	0	0	0	0	0.011	0	0	0	0.011
25%	0	0	0	0	0	0	0	0	0.087	0	0	0	0.087
75%	0	0	0	0	0	0	0	0	0.313	0	0	0	0.313
97.5%	0	0	0	0	0	0	0	0	0.86	0	0	0	0.86

Table 3.36 Sandwich Tern–- predicted collisions per month, sCRM, Option 2 – MaRD

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	0	0	0	0	0	0	0	0	0.198	0	0	0	0.198
SD	0	0	0	0	0	0	0	0	0.185	0	0	0	0.185
CV	0	0	0	0	0	0	0	0	0.936	0	0	0	0.936
Median	0	0	0	0	0	0	0	0	0.147	0	0	0	0.147
2.5%	0	0	0	0	0	0	0	0	0.01	0	0	0	0.01
25%	0	0	0	0	0	0	0	0	0.073	0	0	0	0.073
75%	0	0	0	0	0	0	0	0	0.249	0	0	0	0.249
97.5%	0	0	0	0	0	0	0	0	0.726	0	0	0	0.726

3.2 Migratory species CRM

3.2.1 Methods and input parameters

84. Migratory species CRM was undertaken for migratory non-seabirds using the British Trust for Ornithology (BTO) SOSSMAT (Strategic Ornithological Support Services Migration Assessment Tool) (Wright *et al*. 2012) following authors' instructions, and the Band (2012) collision risk modelling tool following author's instructions for migratory bird collision risk. Migratory species CRM was also undertaken for selected migratory seabird species: skuas, terns and little gull, using the Band (2012) collision risk modelling tool only, following author's instructions for migratory bird collision risk. Digital aerial surveys are expected to be less effective at capturing migratory movements for these species as they can occur in concentrated movements of large proportions of the population with low probability of coinciding with monthly surveys – and some species or migratory flocks will undertake migration at night when surveys are not scheduled. The SOSSMAT approach takes into account estimates migration corridor footprints and migratory population sizes, plus the location and footprint of the OWF, to estimate numbers of each migratory bird species passing through the OWF each year. The Band (2012) tool for migrant collision risk uses these estimated passage numbers, turbine parameters, bird biometrics, estimated avoidance rates and percentage of birds at flight height, to estimate collision risk and mortality for migratory bird species from the operational turbine array.

3.2.1.1 Species for consideration

85. Estimation of collision risk to migratory birds within the Band (2012) tool considered:

- Migratory seabird, waterbird and landbird species populations which are qualifying features of SPAs (and Ramsar sites) identified within 100km of North Falls carried forward for consideration of LSE during HRA screening. Where relevant for a given species, populations migrating to breed in SPAs within this area are distinguished from populations migrating to spend the non-breeding season; for example, avocet (non-breeding) is distinguished from avocet (breeding).

86. Estimation of populations at collision risk within the SOSSMAT, considered all species pre-loaded within the SOSSMAT with the following exceptions:

- Seabirds (see Section 3.2.3 below); and
- Migratory goose populations whose entire migratory corridor does not include North Falls Offshore Wind Farm such as pink-footed goose *Anser brachyrhynchus*, Greenland barnacle goose *Branta leucopsis*, Canadian light-bellied brent goose *Branta bernicla*.

3.2.2 Non-seabird migratory collision risk using SOSSMAT

3.2.2.1 Geographic selection of flightlines

87. In order to quantify the proportion of migratory paths of a given species of relevance to the OWF, the first stage of the SOSSMAT approach involves geographic selection of all possible connecting oversea flightlines for birds

migrating to and from Britain and Ireland, which intersect with the offshore wind farm array area footprint. The GIS vector line dataset provided by the SOSSMAT package, totalling 251599 connecting lines, was loaded to GIS software (QGIS 3.16) along with a vector polygon dataset showing the footprint of the North Falls Array Area. The 'select by location' function was used to select intersecting SOSSMAT lines. The Array Area was intersected by a total of 1004 lines from SOSSMAT. The identified intersecting lines were delineated from non-intersecting lines within the SOSSMAT workbook following authors' instructions.

3.2.2.2 Filtering of routes

88. In order for the SOSSMAT to calculate based only on sea-crossing stages relevant to the OWF, and estimate the proportion of each migrant population crossing the array area; the second stage of the SOSSMAT approach requires selection of broad sea-crossing routes in the Route Filter sheet of the SOSSMAT workbook. All combinations of start and end regions (as illustrated in Wright *et al*. (2012) page 205) were considered, and those crossing the sea area in which the North Falls array area is located, were identified. These sea-crossings are named in Table 3.37. Annex 3, Figure 13.2.26 shows the alignment of each Route to the North Falls array area and surrounding sea area.

Table 3.37 British Trust for Ornithology SOSS Migration Assessment Tool sea-crossing codes relevant to the North Falls Array and included in analysis

SOSS-MAT Start-End Code	Connection ("START")	Connection ("END")
EUNECE EUNENS EUNNOR EUNORK EUNSNS EUNSHE	Central Europe North Sea Coast	England eastern English Channel coast England North Sea coast Norway Orkney Scottish mainland North Sea coast Shetland
DENEUN DENENS	Denmark	Central Europe North Sea coast England North Sea coast
ENSENS	England North Sea coast	England North Sea coast
NORENS	Norway	England North Sea coast

3.2.2.3 Migrant population size and population correction factor

89. The GIS selection of lines and the Route Filter section of the SOSSMAT, together calculate the percentage of the total migrant population crossing the array area. To estimate absolute numbers of individuals crossing the North Falls Array (which is required for input to the Band (2012) Collision Risk Modelling tool), values for a) the migratory population size and b) a Population Correction Factor, are required for each species under consideration. Population size is the total population undertaking sea crossing migration via any route into Britain (in many cases including the onward migratory population wintering in Ireland). The Population Correction Factor is an estimated percentage of the above migratory population size relevant to the sea area covered by the selected sea-crossing routes in Section 3.2.2.2 and Table 3.37 The sea area in this assessment for North Falls is effectively the North Sea, bounded at the north

by Shetland and Norway and at the south by Kent and the northernmost point of France (Annex 3, Figure 13.2.27).

90. **Population sizes** are provided in species accounts of Wright *et al.* (2012). It is recognised that for some species more recent population estimates are available, however for most species it was considered appropriate to use population sizes from the time that the migratory CRM was developed. Wright *et al*. (2012) species accounts provide details of the derivation of migrant population size, such as whether to include both the Great Britain and Ireland wintering populations (e.g. when both populations entered the region via the North Sea), or only the Great Britain wintering population, and whether to exclude sections of the quoted populations in Wright *et al.* (2012) expected to not undertake migratory movements over sea (e.g. a sedentary breeding population). To calculate migrant population sizes for coot and lapwing, it was necessary to seek out separate GB breeding and non-breeding population sizes not reported in Wright *et al.* (2012). This data was sourced from BTO Birdfacts (https://www.bto.org/understanding-birds/welcome-birdfacts). To calculate migrant population sizes for marsh harrier, bittern, avocet (GB breeding), and avocet (GB non-breeding), the most recent GB population size data was sought and accessed from BTO Birdfacts. These species are qualifying features of SPAs and Ramsar sites screened in for further consideration for LSE which have also experienced exceptional long-term population increases (Stanbury *et al.,* 2021), therefore recent population data was considered a priority to avoid underestimating numbers of these species potentially crossing the array area.

91. **Population Correction Factor** was determined by examining the full species account in Wright *et al*. (2012) further to the migratory corridor maps for each species account, as further information is often detailed regarding, for example, how different sea crossing regions account for different proportions or different types (e.g. main migration, cold-weather or onward movements) of migratory movements annually.

3.2.2.4 Collision risk modelling

92. In the Band (2012) CRM spreadsheet, data was entered to the Input Data worksheet sections Bird Data, Birds on Migration Data, Windfarm Data and Turbine Data. Bird (biometric) data entered for all species is presented in Table 3.38. Percentage at collision height (PCH) was estimated following guide values by bird taxonomic group in Wright *et al*. (2012; Table 3). Birds on Migration Data entered included estimated numbers of individuals from the SOSSMAT process above, inputted to the most appropriate 'spring' and / or 'autumn' month of passage, based on species accounts in Wright *et al*. (2012). (Autumn-only passage was concluded to be appropriate for ringed plover of the GB non-breeding population, and aquatic warbler. Spring-only passage was concluded for stone-curlew, all based on Wright *et al*. (2012). Passage in both spring and autumn was concluded for all other species based on Wright *et al*. (2012).) Windfarm and Turbine Data entered was as for the 'Min' scenario of 57 smaller turbines Table 3.13. This scenario was considered a priori likely to result in the highest collision rates for all seabird species considered in Section 3 and therefore the worst case. The Migrant Collision Risk worksheet was then utilised for the calculation of collision risk for each species. Band Option 1 was used for all waterbird and landbird species as output data could not take flight height

distribution into account. Avoidance rate of 0.980 and Nocturnal Activity Factor of 5 was assumed for all waterbird and landbird species including in analysis.

Table 3.38 Biometric parameters for offshore ornithology receptors screened into SOSSMAT assessment for North Falls

Species	Migrant population	Pop. Correction Factor (%)	Flight type	Body length (m)	Wingspan (m)	Flight speed (m/s)	% PCH	Lower Limit	Upper Limit	Sources (where alternative to Robinson (2005), Alerstam *et al.* (2007), Wright *et al.* (2012) used for majority of species)
Aquatic warbler	33	100	Flapping	0.13	0.20	3.5	50	5	75	
Avocet	GB breeding 3900 GB non-breeding 8700	GB breeding 50 GB non-breeding 100	Flapping	0.44	0.78	11.1	25	5	75	
Bar-tailed godwit	54280	100	Flapping	0.38	0.75	18.3	25	5	75	
Bewick's swan	7380	100	Flapping	1.21	1.96	18.5	50	10	90	
Bittern	400	100	Flapping	0.75	1.30	8.8	50	5	95	
Black-tailed godwit *islandica*	43000	50	Flapping	0.44	0.82	18.3	25	5	75	Snow & Perrins, Alerstam *et al.* (2007)
Coot	153000	50	Flapping	0.38	0.80	13.8	50	5	95	Cramp (1980), Birdlife Int Flight For Survival
Dark-bellied brent goose	91000	100	Flapping	0.58	1.15	17.7	30	5	75	
Dunlin *alpina*	438480	100	Flapping	0.18	0.40	15.3	25	5	75	
Gadwall	26420	50	Flapping	0.51	0.90	16.9	15	0.1	60	
Golden plover	GB breeding 45200	GB breeding 10	Flapping	0.28	0.72	17.9	25	5	75	

Species	Migrant population	Pop. Correction Factor (%)	Flight type	Body length (m)	Wingspan (m)	Flight speed (m/s)	% PCH	Lower Limit	Upper Limit	Sources (where alternative to Robinson (2005), Alerstam *et al.* (2007), Wright *et al.* (2012) used for majority of species)
	GB non-breeding 400000	GB non-breeding 50								
Goldeneye	29965	100	Flapping	0.46	0.72	21.2	15	0.1	60	
Great crested grebe	14300	100	Flapping	0.61	0.73	17.1	10	1	40	del Hoyo *et al.*, Binford (2010) (red-necked grebe)
Grey plover	49315	100	Flapping	0.28	0.77	17.9	25	5	75	
Hen harrier	GB breeding 570 GB non-breeding 375	GB breeding 50 GB non-breeding 100	Flapping	0.52	1.20	9.1	50	25	100	Snow & Perrins, Alerstam *et al.* (2007)
Knot	320000	50	Flapping	0.24	0.59	20.1	25	5	75	
Lapwing	631700	100	Flapping	0.30	0.84	11.9	25	5	75	
Marsh harrier	1180	25	Flapping	0.56	1.30	13.2	50	25	100	Cramp & Simmons, Horvitz *et al.* 2014
Nightjar	9200	50	Flapping	0.28	0.59	9.7	50	10	95	del Hoyo *et al.* HboW, Evens *et al.* 2018
Oystercatcher	GB non-breeding 207000	50	Flapping	0.42	0.83	13.9	25	5	75	
Pintail	30235	50	Flapping	0.58	0.88	16.6	15	0.1	60	
Pochard	76000	100	Flapping	0.46	0.77	21.2	15	0.1	60	
Redshank	GB breeding *britannica* 38800	GB breeding *britannica* 50	Flapping	0.28	0.62	18.3	25	5	75	

Species	Migrant population	Pop. Correction Factor (%)	Flight type	Body length (m)	Wingspan (m)	Flight speed (m/s)	% PCH	Lower Limit	Upper Limit	Sources (where alternative to Robinson (2005), Alerstam *et al.* (2007), Wright *et al.* (2012) used for majority of species)
	GB non-breeding *robusta* 400000 *totanus* 25000	GB non-breeding *robusta* 50 *totanus* 100								
Ringed plover	GB breeding 10876 GB non-breeding 73000	GB breeding 10 GB non-breeding 50	Flapping	0.19	0.52	10.6	25	5	75	
Ruff	800	100	Flapping	0.25	0.53	16.9	25	5	75	
Shelduck	40000	100	Flapping	0.62	1.12	15.4	15	0.1	60	
Shoveler	18545	100	Flapping	0.48	0.77	16.9	15	0.1	60	
Stone-curlew	694	100	Flapping	0.46	0.88	3.7	25	5	75	Birds In Bulgaria, Falchi *et al.* 2023
Teal	250000	50	Flapping	0.36	0.61	16.9	15	0.1	60	
Tufted duck	146610	100	Flapping	0.44	0.70	21.2	15	0.1	60	
Turnstone	48000	40	Flapping	0.23	0.54	17.7	25	5	75	
White-fronted goose	Eurasian breeding 2400 Greenland breeding 13000	Eurasian breeding 100 Greenland breeding 0	Flapping	0.72	1.48	16.1	30	5	75	

Species	Migrant population	Pop. Correction Factor (%)	Flight type	Body length (m)	Wingspan (m)	Flight speed (m/s)	% PCH	Lower Limit	Upper Limit	Sources (where alternative to Robinson (2005), Alerstam *et al.* (2007), Wright *et al.* (2012) used for majority of species)
Whooper swan	200 (Wright *et al.* 2012 pale blue)	100	Flapping	1.52	2.30	17.3	50	10	90	
Wigeon	522370	100	Flapping	0.48	0.80	18.5	15	0.1	60	
Woodlark	6128	50	Flapping	0.15	0.30	15.0	50	5	75	del Hoyo *et al.* HboW, Hedenstrom & Alerstam (1996)

Table 3.39 Biometric parameters for seabird species screened into migratory CRM assessment for North Falls

Species	Migrant population (Furness 2015)	Flight type	Body length (m)	Wingspan (m)	Flight speed (m/s)	Sources (where alternative to Robinson (2005), Alerstam *et al.* (2007), Wright *et al.* (2012) used for majority of species)
Sandwich tern	38051	Flapping	0.39	1.00	8.3	Robinson (2005), Fijn & Collier, Cook *et al.* (2014)
Common tern	144911	Flapping	0.33	0.88	10.5	Robinson (2005), Christensen & Hounisen (2004, 2005), Cook *et al.* (2014)
Arctic tern	163930	Flapping	0.34	0.80	10.5	Robinson (2005), Christensen & Hounisen (2004, 2005), Cook *et al.* (2014)
Roseate tern	251	Flapping	0.36	0.76	10.5	del Hoyo *et al.* HBoW, Christensen & Hounisen (2004, 2005), Wright *et al.* (2012)
Great skua	Spring 8485 Autumn 19556	Flapping	0.56	1.36	16.0	Robinson (2005), EastAngliaOne assessment
Arctic skua	Spr 1227 Aut 6427	Flapping	0.48	1.07	9.7	North-West Atlantic Ocean species (NWARMS), Davenport (1975) (pomarine skua), Cook *et al.* (2014)
Little gull	75000 (Aut only)	Flapping	0.26	0.78	11.5	Robinson (2017), Pennycuick (1987) or Alerstam (2007), King *et al.* (2009)

3.2.3 Seabird migratory collision risk modelling

93. Natural England guidance and authors' guidance for SOSSMAT (Wright *et al.*,2012) recommend that the SOSSMAT is not suitable for migrant seabird species which typically follow coastlines, rather than straight lines between origin and destination. On this basis, numbers of individuals of migratory seabird species passing through the North Falls array were instead estimated through apportioning migratory seabird numbers within a migratory front of set width from the coast, following the Marine Scotland strategic assessment of OWFs to migratory birds (WWT & MacArthur Green 2014). Great skua was assumed to migrate within 40km of the coast, Arctic skua, Arctic tern and little gull within 20km, and Sandwich, roseate and common terns within 10km. Numbers of individuals migrating within the migratory corridor of each species were the total population of the BDMPS relevant to the North Sea during spring and autumn migration periods (Furness 2015). For terns the spring passage population sizes were identical to those for autumn passage, and for skuas the spring and autumn passage populations differed, following Furness (2015) data in all cases. For little gull, the number of individuals migrating through the migratory corridor was the flyway population estimated in Stienen (2007) and was attributed to an autumn passage only. Bird (biometric) data entered for all species is presented in Table 3.39. Migratory corridor width was that recommended above for each species, with the precautionary assumption that all species' migratory corridors could overlap the array area in full, for example if terns were to traverse (rather than circumnavigate) the Outer Thames Estuary during migration. Numbers of individuals from the appropriate BDMPS were inputted to the most appropriate 'spring' and 'autumn' month of passage, based on species accounts in Wright *et al*. (2012). (Little gull does not feature in this publication and was entered as migrating in autumn only, based on baseline DAS data). Windfarm and Turbine Data entered was as for the 'Min' scenario of 57 smaller turbines as also entered to the stochastic CRM tool for seabirds above. Flight height data for each species from the SOSS-02 (Johnston *et al*., 2014a, 2014b) Flight Heights Spreadsheet was entered to the 'FlightHeight' worksheet. (In order to obtain lower and upper estimates of percentage at collision height, all Band (2012) modelling was repeated with lower 95% and upper 95% confidence limit flight height data (Johnston *et al.,* 2014a, 2014b) entered to this worksheet.) Nocturnal Activity Factor was 1 for terns and skuas and 2 for little gull, following King *et al.* (2009). Avoidance rate of 0.990 was assumed for all seabird species included in analysis. The Migrant Collision Risk worksheet was then utilised for the calculation of collision risk for each seabird species. Band Option 2 was used as the output data could take into account flight height distribution.

3.2.4 Results

94. Collision risk for migrating non-seabirds at North Falls is presented in Table 3-40 along with the national populations of the species (as per Wright *et al*., 2012), and the number of collisions expressed as a percentage of the national population. (National populations are for the season relevant to each combination of species and season occurring as a SPA population at sites screened in for further assessment, for example avocet (breeding), avocet (non-breeding)).

Collision risk for migrating seabirds at North Falls is presented in

95. Table 3.41 along with the national populations of the species (as per Wright *et al.*, 2012), and the number of collisions expressed as a percentage of the national population.

Table 3.40 SOSSMAT-derived annual collision mortality (Band Option 1) for migratory waterbirds and landbirds that are qualifying features of SPAs within 100km of North Falls, based on Minimum turbine (size) scenario. PCH = percent at collision height based on Wright *et al.* (2012) values and upper and lower range limits. Species populations and collision risks relate to birds contributing to non-breeding populations of SPAs, unless specified in parentheses.

Species	National Population (Wright *et al*., 2012)	Wright *et al*. (2012) PCH		Range Lower Limit		Range Upper Limit	
		Annual Collision Rate, (0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population
Aquatic warbler	33	0.00	0.003%	0.00	0.000%	0.00	0.006%
Avocet (breeding)	1754	0.04	0.002%	0.01	0.000%	0.12	0.007%
Avocet (non-breeding)	7500	0.22	0.003%	0.04	0.001%	0.66	0.009%
Bar-tailed godwit	54280	0.34	0.001%	0.07	0.000%	1.02	0.002%
Bewick's swan	7380	0.48	0.007%	0.10	0.001%	0.86	0.012%
Bittern (non-breeding)	600	0.02	0.003%	0.00	0.000%	0.04	0.006%
Black-tailed godwit *islandica*	56880	0.18	0.000%	0.04	0.000%	0.54	0.001%
Coot	213160	2.04	0.001%	0.20	0.000%	3.86	0.002%
Dark-bellied brent goose	91000	2.14	0.002%	0.36	0.000%	5.38	0.006%
Dunlin *alpina*	438480	2.10	0.000%	0.42	0.000%	6.28	0.001%
Gadwall	25630	0.08	0.000%	0.00	0.000%	0.32	0.001%
Golden plover	400000	1.92	0.000%	0.38	0.000%	5.78	0.001%
Goldeneye	29665	0.12	0.000%	0.00	0.000%	0.48	0.002%
Great crested grebe	24385	0.08	0.000%	0.01	0.000%	0.32	0.001%
Grey plover	49315	0.30	0.001%	0.06	0.000%	0.9	0.002%

Species	National Population (Wright *et al*., 2012)	Wright *et al*. (2012) PCH		Range Lower Limit		Range Upper Limit	
		Annual Collision Rate, (0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population
Hen harrier	750	0.01	0.001%	0.00	0.000%	0.01	0.002%
Knot	338970	0.84	0.000%	0.17	0.000%	2.52	0.001%
Lapwing	620000	4.06	0.001%	0.82	0.000%	12.2	0.002%
Marsh harrier (breeding)	402	0.02	0.005%	0.01	0.002%	0.04	0.010%
Nightjar (breeding)	9200	0.14	0.002%	0.03	0.000%	0.27	0.003%
Oystercatcher	320000	0.68	0.000%	0.14	0.000%	2.04	0.001%
Pintail	30235	0.06	0.000%	0.00	0.000%	0.24	0.001%
Pochard	75780	0.34	0.000%	0.00	0.000%	1.36	0.002%
Redshank	463800	1.76	0.000%	0.36	0.000%	5.3	0.001%
Ringed plover (breeding)	10876	0.02	0.000%	0.00	0.000%	0.06	0.001%
Ringed plover (non-breeding)	34000	0.10	0.000%	0.02	0.000%	0.30	0.001%
Ruff	800	0.01	0.001%	0.00	0.000%	0.02	0.002%
Shelduck	75610	0.18	0.000%	0.00	0.000%	0.72	0.001%
Shoveler	20545	0.08	0.000%	0.00	0.000%	0.32	0.002%
Stone-curlew (breeding)	694	0.02	0.003%	0.00	0.001%	0.06	0.009%
Teal	255010	0.44	0.000%	0.00	0.000%	1.76	0.001%
Tufted duck	146610	0.52	0.000%	0.00	0.000%	2.08	0.001%
Turnstone	59810	0.10	0.000%	0.02	0.000%	0.30	0.001%

Species	National Population (Wright *et al*., 2012)	Wright *et al*. (2012) PCH		Range Lower Limit		Range Upper Limit	
		Annual Collision Rate, (0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population	Annual Collision Rate, 0.980 Avoidance rate	Collisions as % of National Population
White-fronted goose	2400	0.08	0.003%	0.01	0.001%	0.20	0.008%
Whooper swan	11000	0.02	0.000%	0.00	0.000%	0.04	0.000%
Wigeon	522370	1.92	0.000%	0.01	0.000%	7.68	0.001%
Woodlark (breeding)	6128	0.14	0.002%	0.01	0.000%	0.21	0.003%

Table 3.41 Annual collision mortality (Band Option 2) for migratory seabirds that are qualifying features of SPAs within the North Sea BDMPS (Furness 2015) containing North Falls, based on 'Min' turbine deployment scenario. PCH = percent at collision height based on Johnston *et al*. (2014a, 2014b) data and upper and lower 95% CL data.

Species	National Population (Wright *et al.*, 2012)	Johnston *et al.* (2014a, 2014b) PCH		Lower 95% CL PCH		Upper 95% CL PCH	
		Annual Collision Rate, (0.990 Avoidance rate	**Collisions as % of National Population**	**Annual Collision Rate, 0.990 Avoidance rate**	**Collisions as % of National Population**	**Annual Collision Rate, 0.990 Avoidance rate**	**Collisions as % of National Population**
Sandwich tern (breeding)	24980	0.71	0.003%	0.58	0.002%	2.12	0.008%
Common tern (breeding)	23676	2.53	0.011%	1.14	0.005%	4.28	0.018%
Arctic tern (breeding)	106776	0.59	0.001%	0.04	0.000%	3.72	0.003%
Roseate tern (breeding)	112	0.00	0.004%	0.00	0.002%	0.01	0.007%
Great skua (breeding)	19268	0.05	0.000%	0.02	0.000%	0.24	0.001%
Arctic skua (breeding)	4272	0.01	0.000%	0.00	0.000%	0.07	0.002%
Little gull (non-breeding)	75000	0.87	0.001%	0.20	0.000%	2.11	0.003%

4 Displacement

4.1 Methods

96. Displacement has been assessed based on the methodology set out in the SNCBs (2017) guidance note. Further details are given in ES Chapter 13 Offshore Ornithology, Section 13.6.2.1 (Document Reference: 3.1.15).

97. For each species scoped in for the displacement assessment, a mean and associated 95% CLs of the peak annual counts for each relevant season was calculated (monthly counts for each species included in Table 4.1 through Table 4.5 below) for the array area and a species-specific buffer (as per SNCBs 2017). The population estimate bootstrap values (calculated by multiplying the relevant area with the density bootstraps (1000 iterations per survey month)) for the two months with the highest mean abundance value (all birds, flying and sitting) were used to calculate seasonal mean peaks for each species with associated LCL and UCL values.

98. Although the SNCB advice on assessing displacement for red-throated diver has recently been updated (SNCBs, 2022), Natural England advised that the approach taken in SNCBs (2017) should be followed for the North Falls ES (Chapter 13 Offshore Ornithology (Document Reference: 3.1.15)). For the RIAA a different approach was taken to assessing displacement in relation to the Outer Thames Estuary SPA, as described in RIAA Part 4, Section 4.4.1.4 (Document Reference: 7.1.4).

Table 4.1 Gannet monthly population estimates for OWF site and 2km buffer with 95% confidence limits (UCL=upper confidence limit, LCL=lower confidence limit), all records (flying and sitting), apportioned aerial survey data. Cell colours indicate seasons, darkest blue= full breeding season, mid blue= autumn migration, light blue= spring migration.

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	No Survey	NS	78	40	0	14	27	60	7	91	430	47
LCL			13	7	0	0	7	23	0	26	263	18
UCL			179	84	0	27	52	105	19	176	608	88
Calendar year 2 (2020)												
Mean	0	313	7	0	60	28	26	0	52	84	144	267
LCL	0	70	0	0	6	6	0	0	12	19	100	13
UCL	0	657	23	0	152	58	59	0	104	160	187	658
Calendar year 3 (2021)												
Mean	46	7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	12	0										
UCL	92	20										

Table 4.2 Guillemot monthly population estimates for OWF site and 2km buffer with 95% confidence limits (UCL=upper confidence limit, LCL=lower confidence limit), all records (flying and sitting), apportioned aerial survey data, records on water corrected for availability bias) Cell colours indicate seasons, dark blue= migration free breeding season, light blue= non-breeding.

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	No Survey	NS	1034	1351	62	18	45	18	18	207	340	1606
LCL			666	592	0	0	9	0	0	137	128	1107
UCL			1391	2579	142	42	86	50	34	317	582	2154
Calendar year 2 (2020)												
Mean	480	9496	184	382	178	86	43	34	76	29	136	877
LCL	213	4555	111	219	82	34	0	9	25	8	72	542
UCL	824	15738	248	577	285	140	107	63	133	55	201	1301
Calendar year 3 (2021)												
Mean	1237	648	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	819	224										
UCL	1634	1204										

Table 4.3 Razorbill monthly population estimates for OWF site and 2km buffer with 95% confidence limits (UCL=upper confidence limit, LCL=lower confidence limit), all records (flying and sitting), apportioned aerial survey data, records on water corrected for availability bias. Cell colours indicate seasons, darkest blue= migration free breeding season, mid blue= autumn and spring migration, light blue= winter.

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	No Survey	NS	572	199	0	0	0	0	0	370	266	1731
LCL			368	93	0	0	0	0	0	165	97	1265
UCL			780	357	0	0	0	0	0	571	480	2345
Calendar year 2 (2020)												
Mean	715	2721	194	1	10	0	0	9	10	127	395	1833
LCL	226	857	133	0	0	0	0	0	0	7	231	1221
UCL	1493	5293	290	1	24	0	0	24	26	321	605	2663
Calendar year 3 (2021)												
Mean	761	708	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	385	391										
UCL	1130	1147										

Table 4.4 Red-throated diver monthly population estimates for OWF site and 4km buffer with 95% confidence limits (UCL=upper confidence limit, LCL=lower confidence limit), all records (flying and sitting), apportioned aerial survey data. Cell colours indicate seasons, darkest blue= migration free breeding season, mid blue= autumn and spring migration, light blue= winter.

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	No Survey	NS	7	0	0	0	0	0	0	0	0	14
LCL			0	0	0	0	0	0	0	0	0	0
UCL			20	0	0	0	0	0	0	0	0	32
Calendar year 2 (2020)												
Mean	7	23	41	0	0	0	0	0	0	0	0	7
LCL	0	0	7	0	0	0	0	0	0	0	0	0
UCL	20	52	86	0	0	0	0	0	0	0	0	20
Calendar year 3 (2021)												
Mean	27	93	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	7	39										
UCL	49	161										

Table 4.5 Sandwich tern monthly population estimates for OWF site and 2km buffer with 95% confidence limits (UCL=upper confidence limit, LCL=lower confidence limit), all records (flying and sitting), apportioned aerial survey data (NS=no survey). Cell colours indicate seasons, darkest blue= full breeding season, mid blue= autumn and spring migration, light blue= winter (species not present in UK offshore waters).

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Calendar year 1 (2019)												
Mean	No Survey	NS	0	0	0	0	0	0	0	0	0	0
LCL			0	0	0	0	0	0	0	0	0	0
UCL			0	0	0	0	0	0	0	0	0	0
Calendar year 2 (2020)												
Mean	0	0	0	0	0	0	0	0	14	0	0	0
LCL	0	0	0	0	0	0	0	0	0	0	0	0
UCL	0	0	0	0	0	0	0	0	39	0	0	0
Calendar year 3 (2021)												
Mean	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LCL	0	0										
UCL	0	0										

4.2 Results

99. Seasonal mean peak populations and displacement matrices for the assessment of operational displacement are included in Table 4-6 below.

100. Displacement matrices (ES Chapter 13 Offshore Ornithology, Section 13.6.2.1 (Document Reference: 3.1.15)) show the number of birds predicted to die at a given rate of displacement (10% - 100% in intervals of 10) and a given rate of mortality of displaced birds (1, 2, 3, 4, 5, 10, 20, 30, 50, 80 and 100%), as described in SNCBs (2017). Mean values are based on seasonal peak mean populations for the relevant species and area, and associated upper and lower confidence limits are also given.

101. This section presents matrices to accompany the displacement matrices in ES Chapter 13 Offshore Ornithology, Section 13.6.2.1 (Document Reference: 3.1.15), showing the percentage increase in the mortality rate of a population resulting from a given displacement mortality scenario, for means and upper and lower confidence limits.

102. The percentage increases in baseline mortality for each species are calculated with reference to the average mortality rates across age classes presented in ES Chapter 13, Section 13.5.4 (Document Reference: 3.1.15). In each case the population mortality increase is calculated as (MD-MB/MB) x 100; where MB is baseline average mortality rate, and MD is mortality rate including additional predicted mortality from displacement. This resolves to the estimated displacement mortality for a given population in a given period (seasonally or annually), divided by the predicted number of deaths from the same population in that period based on the average mortality rate, expressed as a percentage.

Table 4.6 Seasonal mean peak populations.

Species	Area	Mean Peak Population (95% confidence limit)				
		Breeding	**Migration-free Breeding**	**Migration - Autumn**	**Winter / Non-Breeding**	**Migration - Spring**
Gannet	Array area +2km buffer	69 (6-173)	-	287 (105-575)	-	290 (19-658)
Guillemot	Array area +2km buffer	-	866 (242-2,346)	-	5,365 (868-14,674)	-
Razorbill	Array area +2km buffer	-	104 (0-328)	248 (8-607)	1,781 (1,239-2,548)	1,741 (413-4,907)
Red-throated Diver	Array area +4km buffer	-	0	0	20 (0-44)	66 (12-149)
Sandwich Tern	Array Area only	0	-	7 (0-36)	-	0

Table 4.7 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for gannet during autumn migration, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean

Displacement \ Mortality	1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
10%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03
20%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.07
30%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.10
40%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.11	0.13
50%	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.13	0.17
60%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.20
70%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.24
80%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.13	0.21	0.27
90%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.15	0.24	0.30
100%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.27	0.34

LCL

Displacement \ Mortality	1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
30%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
40%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05
50%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
60%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.07
70%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.07	0.08
80%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.08	0.10
90%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.09	0.11
100%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.10	0.12

UCL

Displacement \ Mortality	1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
10%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.07
20%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.11	0.13
30%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.20
40%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.13	0.22	0.27
50%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.27	0.34
60%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.12	0.20	0.32	0.40
70%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.24	0.38	0.47
80%	0.01	0.01	0.02	0.02	0.03	0.05	0.11	0.16	0.27	0.43	0.54
90%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.18	0.30	0.49	0.61
100%	0.01	0.01	0.02	0.03	0.03	0.07	0.13	0.20	0.34	0.54	0.67

Table 4.8 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for gannet during the breeding season, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of operational displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.07
	20%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.11	0.14
	30%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.11	0.17	0.21
	40%	0.00	0.01	0.01	0.01	0.01	0.03	0.06	0.09	0.14	0.23	0.29
	50%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.18	0.29	0.36
	60%	0.00	0.01	0.01	0.02	0.02	0.04	0.09	0.13	0.21	0.34	0.43
	70%	0.00	0.01	0.01	0.02	0.02	0.05	0.10	0.15	0.25	0.40	0.50
	80%	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.17	0.29	0.46	0.57
	90%	0.01	0.01	0.02	0.03	0.03	0.06	0.13	0.19	0.32	0.51	0.64
	100%	0.01	0.01	0.02	0.03	0.04	0.07	0.14	0.21	0.36	0.57	0.71
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	30%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
	40%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03
	50%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03
	60%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
	70%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05
	80%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05
	90%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
	100%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.09	0.14	0.18
	20%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.18	0.29	0.36
	30%	0.01	0.01	0.02	0.02	0.03	0.05	0.11	0.16	0.27	0.43	0.54
	40%	0.01	0.01	0.02	0.03	0.04	0.07	0.14	0.22	0.36	0.58	0.72
	50%	0.01	0.02	0.03	0.04	0.04	0.09	0.18	0.27	0.45	0.72	0.90
	60%	0.01	0.02	0.03	0.04	0.05	0.11	0.22	0.32	0.54	0.86	1.08
	70%	0.01	0.03	0.04	0.05	0.06	0.13	0.25	0.38	0.63	1.01	1.26
	80%	0.01	0.03	0.04	0.06	0.07	0.14	0.29	0.43	0.72	1.15	1.44
	90%	0.02	0.03	0.05	0.06	0.08	0.16	0.32	0.49	0.81	1.30	1.62
	100%	0.02	0.04	0.05	0.07	0.09	0.18	0.36	0.54	0.90	1.44	1.80

Table 4.9 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for gannet during the spring migration period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
	20%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.10	0.12
	30%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.09	0.15	0.19
	40%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.20	0.25
	50%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.16	0.25	0.31
	60%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.19	0.30	0.37
	70%	0.00	0.01	0.01	0.02	0.02	0.04	0.09	0.13	0.22	0.35	0.44
	80%	0.00	0.01	0.01	0.02	0.02	0.05	0.10	0.15	0.25	0.40	0.50
	90%	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.17	0.28	0.45	0.56
	100%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.19	0.31	0.50	0.62
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	30%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	40%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
	50%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
	60%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
	70%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03
	80%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03
	90%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
	100%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.11	0.14
	20%	0.00	0.01	0.01	0.01	0.01	0.03	0.06	0.08	0.14	0.23	0.28
	30%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.13	0.21	0.34	0.42
	40%	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.17	0.28	0.45	0.57
	50%	0.01	0.01	0.02	0.03	0.04	0.07	0.14	0.21	0.35	0.57	0.71
	60%	0.01	0.02	0.03	0.03	0.04	0.08	0.17	0.25	0.42	0.68	0.85
	70%	0.01	0.02	0.03	0.04	0.05	0.10	0.20	0.30	0.50	0.79	0.99
	80%	0.01	0.02	0.03	0.05	0.06	0.11	0.23	0.34	0.57	0.91	1.13
	90%	0.01	0.03	0.04	0.05	0.06	0.13	0.25	0.38	0.64	1.02	1.27
	100%	0.01	0.03	0.04	0.06	0.07	0.14	0.28	0.42	0.71	1.13	1.42

Table 4.10 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for guillemot during the non-breeding season, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.23
	20%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.23	0.37	0.46
	30%	0.01	0.01	0.02	0.03	0.03	0.07	0.14	0.21	0.35	0.56	0.70
	40%	0.01	0.02	0.03	0.04	0.05	0.09	0.19	0.28	0.46	0.74	0.93
	50%	0.01	0.02	0.03	0.05	0.06	0.12	0.23	0.35	0.58	0.93	1.16
	60%	0.01	0.03	0.04	0.06	0.07	0.14	0.28	0.42	0.70	1.11	1.39
	70%	0.02	0.03	0.05	0.06	0.08	0.16	0.32	0.49	0.81	1.30	1.62
	80%	0.02	0.04	0.06	0.07	0.09	0.19	0.37	0.56	0.93	1.48	1.86
	90%	0.02	0.04	0.06	0.08	0.10	0.21	0.42	0.63	1.04	1.67	2.09
	100%	0.02	0.05	0.07	0.09	0.12	0.23	0.46	0.70	1.16	1.86	2.32
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
	20%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.06	0.08
	30%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.09	0.11
	40%	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.12	0.15
	50%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.09	0.15	0.19
	60%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.11	0.18	0.23
	70%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.13	0.21	0.26
	80%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.15	0.24	0.30
	90%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.27	0.34
	100%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.11	0.19	0.30	0.38
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.01	0.01	0.02	0.03	0.03	0.06	0.13	0.19	0.32	0.51	0.63
	20%	0.01	0.03	0.04	0.05	0.06	0.13	0.25	0.38	0.63	1.02	1.27
	30%	0.02	0.04	0.06	0.08	0.10	0.19	0.38	0.57	0.95	1.52	1.90
	40%	0.03	0.05	0.08	0.10	0.13	0.25	0.51	0.76	1.27	2.03	2.54
	50%	0.03	0.06	0.10	0.13	0.16	0.32	0.63	0.95	1.59	2.54	3.17
	60%	0.04	0.08	0.11	0.15	0.19	0.38	0.76	1.14	1.90	3.05	3.81
	70%	0.04	0.09	0.13	0.18	0.22	0.44	0.89	1.33	2.22	3.55	4.44
	80%	0.05	0.10	0.15	0.20	0.25	0.51	1.02	1.52	2.54	4.06	5.08
	90%	0.06	0.11	0.17	0.23	0.29	0.57	1.14	1.71	2.86	4.57	5.71
	100%	0.06	0.13	0.19	0.25	0.32	0.63	1.27	1.90	3.17	5.08	6.34

Table 4.11 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for guillemot during the breeding season, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). Whitecells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.07	0.09
	20%	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.09	0.14	0.17
	30%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.13	0.21	0.26
	40%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.28	0.35
	50%	0.00	0.01	0.01	0.02	0.02	0.04	0.09	0.13	0.22	0.35	0.44
	60%	0.01	0.01	0.02	0.02	0.03	0.05	0.10	0.16	0.26	0.42	0.52
	70%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.18	0.30	0.49	0.61
	80%	0.01	0.01	0.02	0.03	0.03	0.07	0.14	0.21	0.35	0.56	0.70
	90%	0.01	0.02	0.02	0.03	0.04	0.08	0.16	0.24	0.39	0.63	0.78
	100%	0.01	0.02	0.03	0.03	0.04	0.09	0.17	0.26	0.44	0.70	0.87
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05
	30%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.07
	40%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.08	0.10
	50%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.10	0.12
	60%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.12	0.15
	70%	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.09	0.14	0.17
	80%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.19
	90%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.18	0.22
	100%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.24
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.24
	20%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.24	0.38	0.47
	30%	0.01	0.01	0.02	0.03	0.04	0.07	0.14	0.21	0.35	0.57	0.71
	40%	0.01	0.02	0.03	0.04	0.05	0.09	0.19	0.28	0.47	0.75	0.94
	50%	0.01	0.02	0.04	0.05	0.06	0.12	0.24	0.35	0.59	0.94	1.18
	60%	0.01	0.03	0.04	0.06	0.07	0.14	0.28	0.42	0.71	1.13	1.42
	70%	0.02	0.03	0.05	0.07	0.08	0.17	0.33	0.50	0.83	1.32	1.65
	80%	0.02	0.04	0.06	0.08	0.09	0.19	0.38	0.57	0.94	1.51	1.89
	90%	0.02	0.04	0.06	0.08	0.11	0.21	0.42	0.64	1.06	1.70	2.12
	100%	0.02	0.05	0.07	0.09	0.12	0.24	0.47	0.71	1.18	1.89	2.36

Table 4.12 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for razorbill during the autumn migration period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05
	30%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.07
	40%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.08	0.09
	50%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.09	0.12
	60%	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04	0.07	0.11	0.14
	70%	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.13	0.16
	80%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.09	0.15	0.19
	90%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.11	0.17	0.21
	100%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.24
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	50%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	60%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	70%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	100%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
	20%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.09	0.12
	30%	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.09	0.14	0.17
	40%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.18	0.23
	50%	0.00	0.01	0.01	0.01	0.01	0.03	0.06	0.09	0.14	0.23	0.29
	60%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.28	0.35
	70%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.12	0.20	0.32	0.40
	80%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.23	0.37	0.46
	90%	0.01	0.01	0.02	0.02	0.03	0.05	0.10	0.16	0.26	0.41	0.52
	100%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.17	0.29	0.46	0.58

Table 4.13 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for razorbill during the winter period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.23	0.37	0.46
	20%	0.01	0.02	0.03	0.04	0.05	0.09	0.18	0.27	0.46	0.73	0.92
	30%	0.01	0.03	0.04	0.05	0.07	0.14	0.27	0.41	0.69	1.10	1.37
	40%	0.02	0.04	0.05	0.07	0.09	0.18	0.37	0.55	0.92	1.46	1.83
	50%	0.02	0.05	0.07	0.09	0.11	0.23	0.46	0.69	1.14	1.83	2.29
	60%	0.03	0.05	0.08	0.11	0.14	0.27	0.55	0.82	1.37	2.20	2.75
	70%	0.03	0.06	0.10	0.13	0.16	0.32	0.64	0.96	1.60	2.56	3.20
	80%	0.04	0.07	0.11	0.15	0.18	0.37	0.73	1.10	1.83	2.93	3.66
	90%	0.04	0.08	0.12	0.16	0.21	0.41	0.82	1.24	2.06	3.30	4.12
	100%	0.05	0.09	0.14	0.18	0.23	0.46	0.92	1.37	2.29	3.66	4.58
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.10	0.16	0.25	0.32
	20%	0.01	0.01	0.02	0.03	0.03	0.06	0.13	0.19	0.32	0.51	0.64
	30%	0.01	0.02	0.03	0.04	0.05	0.10	0.19	0.29	0.48	0.76	0.96
	40%	0.01	0.03	0.04	0.05	0.06	0.13	0.25	0.38	0.64	1.02	1.27
	50%	0.02	0.03	0.05	0.06	0.08	0.16	0.32	0.48	0.80	1.27	1.59
	60%	0.02	0.04	0.06	0.08	0.10	0.19	0.38	0.57	0.96	1.53	1.91
	70%	0.02	0.04	0.07	0.09	0.11	0.22	0.45	0.67	1.11	1.78	2.23
	80%	0.03	0.05	0.08	0.10	0.13	0.25	0.51	0.76	1.27	2.04	2.55
	90%	0.03	0.06	0.09	0.11	0.14	0.29	0.57	0.86	1.43	2.29	2.87
	100%	0.03	0.06	0.10	0.13	0.16	0.32	0.64	0.96	1.59	2.55	3.18
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.01	0.01	0.02	0.03	0.03	0.07	0.13	0.20	0.33	0.52	0.65
	20%	0.01	0.03	0.04	0.05	0.07	0.13	0.26	0.39	0.65	1.05	1.31
	30%	0.02	0.04	0.06	0.08	0.10	0.20	0.39	0.59	0.98	1.57	1.96
	40%	0.03	0.05	0.08	0.10	0.13	0.26	0.52	0.79	1.31	2.10	2.62
	50%	0.03	0.07	0.10	0.13	0.16	0.33	0.65	0.98	1.64	2.62	3.27
	60%	0.04	0.08	0.12	0.16	0.20	0.39	0.79	1.18	1.96	3.14	3.93
	70%	0.05	0.09	0.14	0.18	0.23	0.46	0.92	1.38	2.29	3.67	4.58
	80%	0.05	0.10	0.16	0.21	0.26	0.52	1.05	1.57	2.62	4.19	5.24
	90%	0.06	0.12	0.18	0.24	0.29	0.59	1.18	1.77	2.95	4.71	5.89
	100%	0.07	0.13	0.20	0.26	0.33	0.65	1.31	1.96	3.27	5.24	6.55

Table 4.14 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for razorbill during the spring migration period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). Grey cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.13	0.17
	20%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.26	0.33
	30%	0.00	0.01	0.01	0.02	0.02	0.05	0.10	0.15	0.25	0.40	0.50
	40%	0.01	0.01	0.02	0.03	0.03	0.07	0.13	0.20	0.33	0.53	0.66
	50%	0.01	0.02	0.02	0.03	0.04	0.08	0.17	0.25	0.41	0.66	0.83
	60%	0.01	0.02	0.03	0.04	0.05	0.10	0.20	0.30	0.50	0.79	0.99
	70%	0.01	0.02	0.03	0.05	0.06	0.12	0.23	0.35	0.58	0.93	1.16
	80%	0.01	0.03	0.04	0.05	0.07	0.13	0.26	0.40	0.66	1.06	1.32
	90%	0.01	0.03	0.04	0.06	0.07	0.15	0.30	0.45	0.74	1.19	1.49
	100%	0.02	0.03	0.05	0.07	0.08	0.17	0.33	0.50	0.83	1.32	1.65
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
	20%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.06	0.08
	30%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.09	0.12
	40%	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.13	0.16
	50%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.20
	60%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.24
	70%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.14	0.22	0.27
	80%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.16	0.25	0.31
	90%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.18	0.28	0.35
	100%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.12	0.20	0.31	0.39
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.01	0.01	0.02	0.02	0.05	0.09	0.14	0.23	0.37	0.47
	20%	0.01	0.02	0.03	0.04	0.05	0.09	0.19	0.28	0.47	0.75	0.93
	30%	0.01	0.03	0.04	0.06	0.07	0.14	0.28	0.42	0.70	1.12	1.40
	40%	0.02	0.04	0.06	0.07	0.09	0.19	0.37	0.56	0.93	1.49	1.86
	50%	0.02	0.05	0.07	0.09	0.12	0.23	0.47	0.70	1.16	1.86	2.33
	60%	0.03	0.06	0.08	0.11	0.14	0.28	0.56	0.84	1.40	2.24	2.79
	70%	0.03	0.07	0.10	0.13	0.16	0.33	0.65	0.98	1.63	2.61	3.26
	80%	0.04	0.07	0.11	0.15	0.19	0.37	0.75	1.12	1.86	2.98	3.73
	90%	0.04	0.08	0.13	0.17	0.21	0.42	0.84	1.26	2.10	3.35	4.19
	100%	0.05	0.09	0.14	0.19	0.23	0.47	0.93	1.40	2.33	3.73	4.66

Table 4.15 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for razorbill during the breeding period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). Grey cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.06
	20%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.10	0.12
	30%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.09	0.15	0.19
	40%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.20	0.25
	50%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.16	0.25	0.31
	60%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.19	0.30	0.37
	70%	0.00	0.01	0.01	0.02	0.02	0.04	0.09	0.13	0.22	0.35	0.44
	80%	0.00	0.01	0.01	0.02	0.02	0.05	0.10	0.15	0.25	0.40	0.50
	90%	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.17	0.28	0.45	0.56
	100%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.19	0.31	0.50	0.62
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	50%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	60%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	70%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.20
	20%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.12	0.20	0.31	0.39
	30%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.18	0.29	0.47	0.59
	40%	0.01	0.02	0.02	0.03	0.04	0.08	0.16	0.24	0.39	0.63	0.78
	50%	0.01	0.02	0.03	0.04	0.05	0.10	0.20	0.29	0.49	0.78	0.98
	60%	0.01	0.02	0.04	0.05	0.06	0.12	0.24	0.35	0.59	0.94	1.18
	70%	0.01	0.03	0.04	0.05	0.07	0.14	0.27	0.41	0.69	1.10	1.37
	80%	0.02	0.03	0.05	0.06	0.08	0.16	0.31	0.47	0.78	1.25	1.57
	90%	0.02	0.04	0.05	0.07	0.09	0.18	0.35	0.53	0.88	1.41	1.76
	100%	0.02	0.04	0.06	0.08	0.10	0.20	0.39	0.59	0.98	1.57	1.96

Table 4.16 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for red-throated diver during the winter period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.07	0.08
	20%	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.14	0.17
	30%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.13	0.20	0.25
	40%	0.00	0.01	0.01	0.01	0.02	0.03	0.07	0.10	0.17	0.27	0.34
	50%	0.00	0.01	0.01	0.02	0.02	0.04	0.08	0.13	0.21	0.34	0.42
	60%	0.01	0.01	0.02	0.02	0.03	0.05	0.10	0.15	0.25	0.41	0.51
	70%	0.01	0.01	0.02	0.02	0.03	0.06	0.12	0.18	0.30	0.48	0.59
	80%	0.01	0.01	0.02	0.03	0.03	0.07	0.14	0.20	0.34	0.54	0.68
	90%	0.01	0.02	0.02	0.03	0.04	0.08	0.15	0.23	0.38	0.61	0.76
	100%	0.01	0.02	0.03	0.03	0.04	0.08	0.17	0.25	0.42	0.68	0.85
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	50%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	60%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	70%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.09	0.15	0.19
	20%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.19	0.30	0.37
	30%	0.01	0.01	0.02	0.02	0.03	0.06	0.11	0.17	0.28	0.45	0.56
	40%	0.01	0.01	0.02	0.03	0.04	0.07	0.15	0.22	0.37	0.60	0.75
	50%	0.01	0.02	0.03	0.04	0.05	0.09	0.19	0.28	0.47	0.75	0.93
	60%	0.01	0.02	0.03	0.04	0.06	0.11	0.22	0.34	0.56	0.90	1.12
	70%	0.01	0.03	0.04	0.05	0.07	0.13	0.26	0.39	0.65	1.04	1.31
	80%	0.01	0.03	0.04	0.06	0.07	0.15	0.30	0.45	0.75	1.19	1.49
	90%	0.02	0.03	0.05	0.07	0.08	0.17	0.34	0.50	0.84	1.34	1.68
	100%	0.02	0.04	0.06	0.07	0.09	0.19	0.37	0.56	0.93	1.49	1.87

Table 4.17 Operational displacement: percentage increase in baseline population mortality (average mortality rate across age classes) for red-throated diver during the spring migration period, based on the number of birds predicted to die at different rates of displacement and mortality of displaced birds. (LCL and UCL = upper and lower 95% confidence limits). White cells identify the range of displacement and mortality rates considered in the assessment.

Mean		Mortality										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.11	0.17	0.21
	20%	0.00	0.01	0.01	0.02	0.02	0.04	0.09	0.13	0.21	0.34	0.43
	30%	0.01	0.01	0.02	0.03	0.03	0.06	0.13	0.19	0.32	0.51	0.64
	40%	0.01	0.02	0.03	0.03	0.04	0.09	0.17	0.26	0.43	0.69	0.86
	50%	0.01	0.02	0.03	0.04	0.05	0.11	0.21	0.32	0.54	0.86	1.07
	60%	0.01	0.03	0.04	0.05	0.06	0.13	0.26	0.39	0.64	1.03	1.28
	70%	0.01	0.03	0.04	0.06	0.07	0.15	0.30	0.45	0.75	1.20	1.50
	80%	0.02	0.03	0.05	0.07	0.09	0.17	0.34	0.51	0.86	1.37	1.71
	90%	0.02	0.04	0.06	0.08	0.10	0.19	0.39	0.58	0.96	1.54	1.93
	100%	0.02	0.04	0.06	0.09	0.11	0.21	0.43	0.64	1.07	1.71	2.14
LCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04
	20%	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.06	0.08
	30%	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.09	0.12
	40%	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.08	0.13	0.16
	50%	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06	0.10	0.16	0.20
	60%	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.07	0.12	0.19	0.23
	70%	0.00	0.01	0.01	0.01	0.01	0.03	0.05	0.08	0.14	0.22	0.27
	80%	0.00	0.01	0.01	0.01	0.02	0.03	0.06	0.09	0.16	0.25	0.31
	90%	0.00	0.01	0.01	0.01	0.02	0.04	0.07	0.11	0.18	0.28	0.35
	100%	0.00	0.01	0.01	0.01	0.02	0.04	0.08	0.12	0.20	0.31	0.39
UCL		**Mortality**										
		1%	2%	3%	4%	5%	10%	20%	30%	50%	80%	100%
Displacement	10%	0.00	0.01	0.01	0.02	0.02	0.05	0.10	0.14	0.24	0.39	0.48
	20%	0.01	0.02	0.03	0.04	0.05	0.10	0.19	0.29	0.48	0.77	0.96
	30%	0.01	0.03	0.04	0.06	0.07	0.14	0.29	0.43	0.72	1.16	1.45
	40%	0.02	0.04	0.06	0.08	0.10	0.19	0.39	0.58	0.96	1.54	1.93
	50%	0.02	0.05	0.07	0.10	0.12	0.24	0.48	0.72	1.20	1.93	2.41
	60%	0.03	0.06	0.09	0.12	0.14	0.29	0.58	0.87	1.45	2.31	2.89
	70%	0.03	0.07	0.10	0.13	0.17	0.34	0.67	1.01	1.69	2.70	3.37
	80%	0.04	0.08	0.12	0.15	0.19	0.39	0.77	1.16	1.93	3.08	3.86
	90%	0.04	0.09	0.13	0.17	0.22	0.43	0.87	1.30	2.17	3.47	4.34
	100%	0.05	0.10	0.14	0.19	0.24	0.48	0.96	1.45	2.41	3.86	4.82

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A1 Annex 1 Monthly seabird density and abundance

A1.1 Arctic skua

Table A1.1.1 Arctic skua design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	3.5	0	10.5
Dec	0	0	0	0	0	0	0	0	0

Table A1.1.2 Arctic skua design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0.01	0	0.03
Dec	0	0	0	0	0	0	0	0	0

Table A1.1.3 Arctic skua design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	3.5	0	10
Dec	0	0	0	0	0	0	0	0	0

Table A1.1.4 Arctic skua design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0.01	0	0.03
Dec	0	0	0	0	0	0	0	0	0

Table A1.1.5 Arctic skua design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.1.6 Arctic skua design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.2 Black-headed gull

Table A1.2.1 Black-headed gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	3.5	0	10.5	3.5	0	10	3.5	0	10
Mar	3.5	0	10	7	0	15.5	13.5	0	28.5
Apr	0.5	0	0.5	17.5	0.5	48	17.5	0.5	50.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	3.5	0	9.5	10.5	0	29	10.5	0	29.5
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	3.5	0	9.5	6.5	0	13.5	7	0	15.5
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.2.2 Black-headed gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.04	0	0.11	0.02	0	0.05	0.01	0	0.03
Mar	0.04	0	0.10	0.03	0	0.07	0.04	0	0.08
Apr	0	0	0	0.08	0	0.22	0.05	0	0.14
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0.04	0	0.10	0.05	0	0.13	0.03	0	0.08
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.04	0	0.10	0.03	0	0.06	0.02	0	0.04
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.2.3 Black-headed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Month \ Abundance	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	3.5	0	9.5	3.5	0	10	3.5	0	10
Mar	3.5	0	10	7	0	15.5	14	0	29
Apr	0	0	0	16.5	0	47.5	16.5	0	49.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	3.5	0	9.5	10.5	0	29	11	0	30
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	3.5	0	10	7	0	13	7	0	15.5
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.2.4 Black-headed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.04	0	0.10	0.02	0	0.05	0.01	0	0.03
Mar	0.04	0	0.10	0.03	0	0.07	0.04	0	0.08
Apr	0	0	0	0.08	0	0.22	0.05	0	0.13
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0.04	0	0.10	0.05	0	0.13	0.03	0	0.08
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.03	0	0.10	0.03	0	0.06	0.02	0	0.04
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.2.5 Black-headed gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0.5	0	0.5	0.5	0	0.5	0.5	0.5	1
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.2.6 Black-headed gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0.03	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.3 Common gull

Table A1.3.1 Common gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.5	0	0.5	0.5	0	0.5
Feb	11	0	30	12	0	32.5	32.5	7	62
Mar	0	0	0	3.5	0	9.5	10.5	0	23.5
Apr	20.5	3	45	61.5	25.5	103	202.5	90.5	345.5
May	0	0	0	3.5	0	9.5	3.5	0	10
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	3.5	0	10	3.5	0	10
Nov	0.5	0	1	0.5	0	1	11	0.5	26
Dec	0	0	0	0	0	0	0	0	0

Table A1.3.2 Common gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.12	0	0.31	0.05	0	0.15	0.09	0.02	0.17
Mar	0	0	0	0.02	0	0.04	0.03	0	0.06
Apr	0.22	0.03	0.47	0.28	0.12	0.47	0.55	0.25	0.93
May	0	0	0	0.02	0	0.04	0.01	0	0.03
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.05	0.01	0	0.03
Nov	0	0	0.01	0	0	0.01	0.03	0	0.07
Dec	0	0	0	0	0	0	0	0	0

Table A1.3.3 Common gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.5	0	0.5	0.5	0	0.5
Feb	7	0	18	7	0	19.5	17	0	38.5
Mar	0	0	0	3.5	0	9.5	10.5	0	25
Apr	10.5	0	29	37	6	80.5	71	20	130
May	0	0	0	3.5	0	9.5	3.5	0	10
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	3.5	0	10	3.5	0	10
Nov	0	0	0	0	0	0	7	0	20
Dec	0	0	0	0	0	0	0	0	0

Table A1.3.4 Common gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.07	0	0.18	0.03	0	0.09	0.05	0	0.10
Mar	0	0	0	0.02	0	0.05	0.03	0	0.07
Apr	0.11	0	0.31	0.17	0.03	0.36	0.19	0.06	0.35
May	0	0	0	0.02	0	0.04	0.01	0	0.03
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.05	0	0	0
Nov	0	0	0	0	0	0	0.02	0	0.05
Dec	0	0	0	0	0	0	0	0	0

Table A1.3.5 Common gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	4.5	0	12.5	5	0	13.5	15.5	0.5	35.5
Mar	0	0	0	0	0	0	0	0	0
Apr	11.5	2.5	21.5	24	12	37	129.5	45.5	235.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0.5	0	1	0.5	0	1	4	0	10.5
Dec	0	0	0	0	0	0	0	0	0

Table A1.3.6 Common gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.05	0	0.13	0.02	0	0.06	0.04	0	0.10
Mar	0	0	0	0	0	0	0	0	0
Apr	0.12	0.03	0.23	0.11	0.06	0.17	0.35	0.12	0.63
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0.01	0	0	0.01	0.01	0	0.03
Dec	0	0	0	0	0	0	0	0	0

A1.4 Common tern

Table A1.4.1 Common tern design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	20	0	56.5	21	0	59
May	0	0	0	0	0	0	7	0	20
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	10	0	30
Aug	10	0	29	20.5	3	42	34	9.5	67
Sep	0	0	0	6.5	0	19.5	7	0	20
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.4.2 Common tern design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0.09	0	0.26	0.06	0	0.16
May	0	0	0	0	0	0	0.02	0	0.06
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0.03	0	0.08
Aug	0.10	0	0.30	0.09	0.02	0.19	0.09	0.03	0.18
Sep	0	0	0	0.03	0	0.09	0.02	0	0.06
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.4.3 Common tern design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	19.5	0	56	20	0	59
May	0	0	0	0	0	0	7	0	20
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	10.5	0	30
Aug	10.5	0	29	20	3	42.5	34	6.5	67
Sep	0	0	0	7	0	20	7	0	20
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.4.4 Common tern design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0.09	0	0.25	0.06	0	0.16
May	0	0	0	0	0	0	0.02	0	0.06
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0.03	0	0.08
Aug	0.11	0	0.30	0.09	0.02	0.19	0.09	0.02	0.18
Sep	0	0	0	0.03	0	0.09	0.02	0	0.06
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.4.5 Common tern design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.4.6 Common tern design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.5 Cormorant

Table A1.5.1 Cormorant design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	10	0	29.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.5.2 Cormorant design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0.03	0	0.08
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.5.3 Cormorant design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	10	0	30
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.5.4 Cormorant design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0.03	0	0.08
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.5.5 Cormorant design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.5.6 Cormorant design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.6 Fulmar

Table A1.6.1 Fulmar design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	3.5	0	10	3.5	0	10.5
Feb	10.5	0	27.5	10	0	25.5	10.5	0	23.5
Mar	13.5	6.5	19	22.5	9.5	38	30.5	19	43.5
Apr	10	0	26	17	0	42	27.5	6.5	56
May	0	0	0	58.5	3	129.5	127.5	23	273.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	3.5	0	10	3.5	0	10
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	3.5	0	10
Oct	3.5	0	9.5	3.5	0	10	3.5	0	10
Nov	0	0	0	3.5	0	9.5	10	0	23.5
Dec	0	0	0	2	0	5	3.5	0	8

Table A1.6.2 Fulmar design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.01	0	0.03
Feb	0.11	0	0.29	0.05	0	0.12	0.03	0	0.07
Mar	0.14	0.07	0.20	0.10	0.04	0.17	0.08	0.05	0.12
Apr	0.10	0	0.27	0.08	0	0.19	0.08	0.02	0.15
May	0	0	0	0.27	0.02	0.59	0.35	0.06	0.74
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0.02	0	0.05	0.01	0	0.03
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0.01	0	0.03
Oct	0.04	0	0.10	0.02	0	0.05	0.01	0	0.03
Nov	0	0	0	0.02	0	0.04	0.03	0	0.06
Dec	0	0	0	0.01	0	0.02	0.01	0	0.02

Table A1.6.3 Fulmar design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	3.5	0	10	3.5	0	10
Feb	0	0	0	0	0	0	0	0	0
Mar	3.5	0	8.5	13	3	29	14	0	31.5
Apr	3.5	0	8	6.5	0	19	10.5	0	32.5
May	0	0	0	6.5	0	19	35	3	87.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	3.5	0	10
Oct	3.5	0	9	3.5	0	10	3.5	0	10
Nov	0	0	0	3.5	0	9.5	3.5	0	10
Dec	0	0	0	0	0	0	0	0	0

Table A1.6.4 Fulmar design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.01	0	0.03
Feb	0	0	0	0	0	0	0	0	0
Mar	0.04	0	0.09	0.06	0.02	0.13	0.04	0	0.09
Apr	0.04	0	0.09	0.03	0	0.09	0.03	0	0.09
May	0	0	0	0.03	0	0.09	0.09	0.01	0.24
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0.01	0	0.03
Oct	0.04	0	0.10	0.02	0	0.05	0.01	0	0.03
Nov	0	0	0	0.02	0	0.04	0.01	0	0.03
Dec	0	0	0	0	0	0	0	0	0

Table A1.6.5 Fulmar design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	10	0	27	10	0	25	10	0	24.5
Mar	10	6	14.5	10	3	16.5	17	10	24
Apr	6.5	0	18.5	10.5	0	25	17	3.5	32.5
May	0	0	0	52	0	118	92.5	16.5	191.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	3.5	0	10	3.5	0	10
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	7.5	0	20
Dec	0	0	0	2	0	5	3.5	0	8

Table A1.6.6 Fulmar design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month h	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.11	0	0.28	0.05	0	0.11	0.03	0	0.07
Mar	0.10	0.06	0.15	0.05	0.02	0.08	0.05	0.03	0.07
Apr	0.07	0	0.20	0.05	0	0.11	0.05	0.01	0.09
May	0	0	0	0.24	0	0.53	0.25	0.05	0.52
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0.02	0	0.05	0.01	0	0.03
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0.02	0	0.06
Dec	0	0	0	0.01	0	0.02	0.01	0	0.02

A1.7 Gannet

Table A1.7.1 Gannet design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	10	0	25	23	6	46	37	6.5	84
Feb	103.5	14.5	251	160	35	338.5	256	88	484
Mar	13.5	0	38	42.5	6.5	101	60	19.5	124
Apr	3.5	0	9	20	3.5	42	30	9.5	57
May	3.5	0	9.5	30	3	76	50	10	104.5
Jun	4	0	12	21	3	42.5	24.5	7	49
Jul	13	3	26	26.5	3.5	55.5	50.5	16.5	86.5
Aug	10.5	0	23.5	30	11.5	52.5	31	10	56.5
Sep	13.5	0	32	29.5	6	61.5	74.5	22.5	148
Oct	39	13	68.5	87.5	22.5	168	173	66.5	289.5
Nov	150.5	72.5	229	287	181.5	397.5	492.5	354.5	631
Dec	15.5	3	34	157	15.5	373	273.5	55	565.5

Table A1.7.2 Gannet design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.11	0	0.26	0.11	0.03	0.21	0.10	0.02	0.23
Feb	1.08	0.15	2.63	0.72	0.16	1.53	0.69	0.24	1.30
Mar	0.14	0	0.40	0.19	0.03	0.45	0.16	0.05	0.33
Apr	0.03	0	0.09	0.09	0.02	0.19	0.08	0.03	0.16
May	0.04	0	0.10	0.14	0.02	0.34	0.14	0.03	0.28
Jun	0.04	0	0.12	0.09	0.02	0.19	0.06	0.02	0.13
Jul	0.14	0.03	0.27	0.12	0.02	0.25	0.13	0.04	0.23
Aug	0.11	0	0.25	0.14	0.05	0.24	0.09	0.03	0.15
Sep	0.14	0	0.33	0.13	0.03	0.28	0.20	0.06	0.40
Oct	0.40	0.13	0.72	0.39	0.11	0.76	0.47	0.18	0.78
Nov	1.57	0.75	2.39	1.30	0.82	1.79	1.33	0.96	1.70
Dec	0.16	0.03	0.36	0.71	0.07	1.68	0.74	0.15	1.52

Table A1.7.3 Gannet design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	7	0	20	20	3.5	41	28	6	62.5
Feb	29.5	0	68.5	63	22	110.5	115.5	42	199
Mar	3.5	0	9.5	13.5	0	34.5	30.5	7	59.5
Apr	0	0	0	7	0	16.5	7	0	16.5
May	0	0	0	3.5	0	9.5	23.5	0	52
Jun	7	0	19.5	10	0	23	14	0	31
Jul	7	0	19.5	14	0	39.5	28	3.5	58
Aug	3.5	0	10.5	10.5	3	19	10.5	3.5	19.5
Sep	3.5	0	10	16.5	3.5	32	57	12	122.5
Oct	20.5	0	42.5	42.5	9.5	79.5	101.5	43.5	164
Nov	57	23	97.5	112	65	159	207.5	140.5	276.5
Dec	3	0	9.5	57	3.5	148.5	112.5	13.5	257.5

Table A1.7.4 Gannet design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.07	0	0.21	0.09	0.02	0.19	0.08	0.02	0.17
Feb	0.31	0	0.72	0.28	0.10	0.50	0.31	0.12	0.54
Mar	0.04	0	0.10	0.06	0	0.16	0.08	0.02	0.16
Apr	0	0	0	0.03	0	0.08	0.02	0	0.05
May	0	0	0	0.02	0	0.04	0.07	0	0.14
Jun	0.07	0	0.20	0.05	0	0.11	0.04	0	0.08
Jul	0.07	0	0.20	0.06	0	0.18	0.07	0.01	0.16
Aug	0.04	0	0.11	0.05	0.02	0.09	0.03	0.01	0.05
Sep	0.04	0	0.10	0.08	0.02	0.15	0.15	0.03	0.33
Oct	0.21	0	0.44	0.19	0.05	0.36	0.28	0.12	0.44
Nov	0.59	0.24	1.02	0.50	0.29	0.72	0.56	0.38	0.75
Dec	0.03	0	0.10	0.25	0.02	0.67	0.30	0.04	0.69

Table A1.7.5 Gannet design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	3.5	0	9.5	3.5	0	10	7	0	16.5
Feb	70.5	3	222.5	93.5	13	232.5	138	36	305
Mar	10	0	28	30.5	6	66	30.5	6.5	67
Apr	3.5	0	9	13	3	29	24	6.5	43.5
May	3.5	0	9	26.5	0	71	27	0	75
Jun	0	0	0	10.5	0	33.5	10.5	0	30
Jul	7	0	13	13.5	0	34	24.5	6.5	50.5
Aug	3.5	0	10	16.5	0	36	17	0	40
Sep	10	0	22	13.5	0	32	17	0	42.5
Oct	19.5	6	42	46.5	6.5	94.5	67	16.5	127.5
Nov	92	38	137.5	170	90.5	253.5	286	188	392
Dec	12.5	0	31	97.5	9.5	216.5	162.5	23	330

Table A1.7.6 Gannet design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.04	0	0.10	0.02	0	0.05	0.02	0	0.05
Feb	0.74	0.03	2.33	0.42	0.06	1.05	0.37	0.10	0.82
Mar	0.11	0	0.29	0.14	0.03	0.30	0.08	0.02	0.18
Apr	0.04	0	0.10	0.06	0.02	0.13	0.07	0.02	0.12
May	0.04	0	0.10	0.12	0	0.32	0.07	0	0.20
Jun	0	0	0	0.05	0	0.15	0.03	0	0.08
Jul	0.07	0	0.14	0.06	0	0.15	0.07	0.02	0.14
Aug	0.04	0	0.10	0.08	0	0.16	0.05	0	0.11
Sep	0.11	0	0.23	0.06	0	0.15	0.05	0	0.11
Oct	0.20	0.06	0.44	0.21	0.03	0.43	0.18	0.04	0.34
Nov	0.96	0.40	1.44	0.77	0.41	1.14	0.77	0.50	1.06
Dec	0.13	0	0.32	0.44	0.04	0.97	0.44	0.06	0.89

A1.8 Great black-backed gull

Table A1.8.1 Great black-backed gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	20.5	0	49	43	7	94
Feb	59.5	0	174.5	63.5	3.5	174	69.5	3.5	192
Mar	0	0	0	3.5	0	10	14	0	32.5
Apr	13	3	22.5	57	6.5	124	77.5	10.5	161.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	3.5	0	10	4	0	10.5
Jul	0	0	0	0	0	0	14	3.5	29
Aug	7	0	16.5	13.5	0	29	0	0	0
Sep	3.5	0	10	7	0	16	13.5	3	29
Oct	7	0	21.5	25.5	3.5	48	91.5	21	191
Nov	0	0	0	3.5	0	9.5	24	7	46.5
Dec	0	0	0	44	3	93	73.5	20.5	138

Table A1.8.2 Great black-backed gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.09	0	0.22	0.12	0.02	0.25
Feb	0.62	0	1.82	0.29	0.02	0.79	0.19	0.01	0.52
Mar	0	0	0	0.02	0	0.05	0.04	0	0.09
Apr	0.14	0.03	0.24	0.26	0.03	0.56	0.21	0.03	0.43
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0.02	0	0.05	0.01	0	0.03
Jul	0	0	0	0	0	0	0.04	0.01	0.08
Aug	0.07	0	0.17	0.06	0	0.13	0	0	0
Sep	0.04	0	0.10	0.03	0	0.07	0.04	0.01	0.08
Oct	0.07	0	0.23	0.12	0.02	0.22	0.25	0.06	0.51
Nov	0	0	0	0.02	0	0.04	0.06	0.02	0.12
Dec	0	0	0	0.20	0.02	0.42	0.20	0.06	0.37

Table A1.8.3 Great black-backed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	3.5	0	10	10	0	26
Feb	7	0	19.5	7	0	19.5	7	0	20
Mar	0	0	0	0	0	0	10.5	0	26.5
Apr	6.5	0	16	10.5	1	22	11	1	24
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	3.5	0	10	7	0	16	13.5	3	29
Oct	3.5	0	9.5	15.5	0	35	32.5	7.5	60.5
Nov	0	0	0	0	0	0	14	0	31
Dec	0	0	0	3.5	0	10	7	0	16

Table A1.8.4 Great black-backed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0.03	0	0.07
Feb	0.07	0	0.20	0.03	0	0.09	0.02	0	0.05
Mar	0	0	0	0	0	0	0.03	0	0.07
Apr	0.07	0	0.17	0.05	0.01	0.10	0.03	0	0.07
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0.04	0	0.10	0.03	0	0.07	0.04	0.01	0.08
Oct	0.04	0	0.10	0.07	0	0.16	0.09	0.02	0.16
Nov	0	0	0	0	0	0	0.04	0	0.08
Dec	0	0	0	0.02	0	0.05	0.02	0	0.04

Table A1.8.5 Great black-backed gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	17	0	38.5	31.5	7	69.5
Feb	59	0	202	60	1	163.5	64	1.5	178
Mar	0	0	0	3.5	0	10	3.5	0	10
Apr	6.5	0	16.5	47.5	0	112.5	65	6.5	143.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	3.5	0	10	4	0	10.5
Jul	0	0	0	0	0	0	13.5	3.5	28
Aug	6.5	0	16.5	13.5	3	30	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	3.5	0	11.5	10.5	0	26	61	0	145.5
Nov	0	0	0	3.5	0	9.5	11	0	30
Dec	0	0	0	40	3	84	68.5	20	125

Table A1.8.6 Great black-backed gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.08	0	0.17	0.09	0.02	0.19
Feb	0.62	0	2.12	0.27	0.01	0.74	0.17	0.01	0.48
Mar	0	0	0	0.02	0	0.05	0.01	0	0.03
Apr	0.07	0	0.17	0.21	0	0.51	0.18	0.02	0.39
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0.02	0	0.05	0.01	0	0.03
Jul	0	0	0	0	0	0	0.04	0.01	0.08
Aug	0.07	0	0.17	0.06	0.02	0.14	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.04	0	0.12	0.05	0	0.12	0.16	0	0.39
Nov	0	0	0	0.02	0	0.04	0.03	0	0.08
Dec	0	0	0	0.18	0.02	0.38	0.19	0.06	0.34

A1.9 Great skua

Table A1.9.1 Great skua design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	3.5	0	12.5	3.5	0	10.5
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.9.2 Great skua design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.06	0.01	0	0.03
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.9.3 Great skua design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	3.5	0	10	3.5	0	10.5
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.9.4 Great skua design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.05	0.01	0	0.03
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.9.5 Great skua design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.9.6 Great skua design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.10 Guillemot

Table A1.10.1 Guillemot design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	357	182	552	859	516	1,229	1,488	1,127	1,847
Feb	3,558	1,637	5,871	5,072	2,390	8,471	7,013	4,313	10,563
Mar	245	136	354	609	389	820	1,094	868	1,337
Apr	222	124	332	867	406	1,578	1,525	754	2,537
May	36	0	75	120	41	214	218	121	326
Jun	9	0	26	52	17	91	81	35	135
Jul	26	0	62	44	5	97	54	13	110
Aug	18	0	38	26	5	57	32	5	75
Sep	22	4	39	47	13	84	82	36	136
Oct	42	9	77	118	73	186	204	100	365
Nov	105	30	201	238	100	392	476	298	686
Dec	438	187	787	1,242	825	1,728	2,462	1,427	3,773

Table A1.10.2 Guillemot design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	3.72	1.90	5.78	3.87	2.33	5.54	4.01	3.03	4.96
Feb	37.29	17.14	61.52	22.89	10.78	38.22	18.87	11.60	28.42
Mar	2.57	1.42	3.70	2.75	1.75	3.70	2.95	2.33	3.60
Apr	2.31	1.29	3.48	3.91	1.83	7.12	4.11	2.02	6.82
May	0.36	0	0.78	0.54	0.19	0.96	0.59	0.33	0.88
Jun	0.09	0	0.26	0.23	0.07	0.41	0.22	0.10	0.36
Jul	0.27	0	0.65	0.20	0.02	0.43	0.14	0.04	0.30
Aug	0.18	0	0.39	0.11	0.02	0.25	0.09	0.02	0.20
Sep	0.22	0.04	0.40	0.21	0.06	0.39	0.22	0.09	0.36
Oct	0.44	0.09	0.80	0.53	0.33	0.84	0.55	0.27	0.98
Nov	1.09	0.31	2.10	1.08	0.45	1.76	1.28	0.81	1.84
Dec	4.58	1.95	8.24	5.60	3.72	7.79	6.63	3.84	10.15

Table A1.10.3 Guillemot design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	34	0	90	110	37	198	182	84	291
Feb	186	102	275	272	160	403	370	208	528
Mar	4	0	12	4	0	12	4	0	10
Apr	0	0	0	17	0	43	31	4	64
May	0	0	0	4	0	10	7	0	20
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	4	0	10
Nov	7	0	15	20	7	39	44	24	65
Dec	4	0	11	19	0	40	24	4	51

Table A1.10.4 Guillemot design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.34	0	0.94	0.49	0.17	0.89	0.49	0.23	0.78
Feb	1.95	1.07	2.88	1.23	0.72	1.82	0.99	0.56	1.42
Mar	0.04	0	0.12	0.02	0	0.05	0.01	0	0.03
Apr	0	0	0	0.08	0	0.19	0.08	0.01	0.17
May	0	0	0	0.02	0	0.05	0.02	0	0.06
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0.01	0	0.03
Nov	0.07	0	0.15	0.09	0.03	0.18	0.12	0.07	0.17
Dec	0.04	0	0.12	0.09	0	0.18	0.07	0.01	0.14

Table A1.10.5 Guillemot design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	323	182	462	749	480	1,031	1,306	1,043	1,556
Feb	3,372	1,535	5,596	4,800	2,230	8,068	6,644	4,105	10,035
Mar	242	136	342	606	389	808	1,091	868	1,327
Apr	222	124	332	850	406	1,536	1,494	751	2,473
May	36	0	75	117	41	204	211	121	306
Jun	9	0	26	52	17	91	81	35	135
Jul	26	0	62	44	5	97	54	13	110
Aug	18	0	38	26	5	57	32	5	75
Sep	22	4	39	47	13	84	82	36	136
Oct	42	9	77	118	73	186	200	100	355
Nov	98	30	187	218	94	353	432	275	622
Dec	435	187	776	1,223	825	1,688	2,439	1,423	3,723

Table A1.10.6 Guillemot design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	3.38	1.90	4.84	3.38	2.16	4.65	3.52	2.81	4.18
Feb	35.34	16.08	58.64	21.66	10.06	36.40	17.88	11.04	27.00
Mar	2.53	1.42	3.58	2.73	1.75	3.65	2.94	2.33	3.57
Apr	2.31	1.29	3.48	3.83	1.83	6.93	4.03	2.01	6.65
May	0.36	0	0.78	0.52	0.19	0.92	0.57	0.33	0.82
Jun	0.09	0	0.26	0.23	0.07	0.41	0.22	0.10	0.36
Jul	0.27	0	0.65	0.20	0.02	0.43	0.14	0.04	0.30
Aug	0.18	0	0.39	0.11	0.02	0.25	0.09	0.02	0.20
Sep	0.22	0.04	0.40	0.21	0.06	0.39	0.22	0.09	0.36
Oct	0.44	0.09	0.80	0.53	0.33	0.84	0.54	0.27	0.95
Nov	1.02	0.31	1.95	0.99	0.42	1.59	1.16	0.74	1.67
Dec	4.55	1.95	8.13	5.51	3.72	7.61	6.56	3.83	10.01

A1.11 Herring gull

Table A1.11.1 Herring gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	3.5	0	9.5	8.5	0	19
Feb	7.5	0	17.5	14	0	30.5	18.5	0	42.5
Mar	3.5	0	9.5	3.5	0	9.5	17	7	27.5
Apr	3.5	0	9.5	3.5	0	10	14	0	33.5
May	3.5	0	12.5	3.5	0	10	3.5	0	10
Jun	3.5	0	10.5	38	0	109.5	66	0	165.5
Jul	0	0	0	3.5	0	10	7	0	20
Aug	0	0	0	4	0	12	10.5	0	27
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	4.5	0	11.5	5	0	12
Nov	3.5	0	10	10.5	0	29.5	10	0	30
Dec	0	0	0	5.5	0	13	10	0	23.5

Table A1.11.2 Herring gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.02	0	0.05
Feb	0.08	0	0.19	0.06	0	0.14	0.05	0	0.11
Mar	0.04	0	0.10	0.02	0	0.05	0.05	0.02	0.08
Apr	0.04	0	0.10	0.03	0	0.09	0.04	0	0.09
May	0.04	0	0.13	0.02	0	0.05	0.01	0	0.03
Jun	0.04	0	0.11	0.17	0	0.49	0.18	0	0.45
Jul	0	0	0	0.02	0	0.05	0.02	0	0.05
Aug	0	0	0	0.02	0	0.06	0.03	0	0.07
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.06	0.01	0	0.03
Nov	0.04	0	0.10	0.05	0	0.13	0.03	0	0.08
Dec	0	0	0	0.03	0	0.06	0.03	0	0.06

Table A1.11.3 Herring gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	3.5	0	9.5	3.5	0	10
Feb	0	0	0	6.5	0	16	10.5	0	26
Mar	0	0	0	0	0	0	7	0	16.5
Apr	3.5	0	9.5	0	0	0	11	0	25.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	3.5	0	10
Jul	0	0	0	3.5	0	10	3.5	0	10.5
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	4.5	0	12	4.5	0	12
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	3.5	0	10.5

Table A1.11.4 Herring gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.01	0	0.03
Feb	0	0	0	0.03	0	0.07	0.03	0	0.07
Mar	0	0	0	0	0	0	0.02	0	0.05
Apr	0.04	0	0.10	0	0	0	0.03	0	0.07
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0.01	0	0.03
Jul	0	0	0	0.02	0	0.05	0.01	0	0.03
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.06	0.01	0	0.03
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0.01	0	0.03

Table A1.11.5 gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	5	0	14
Feb	7.5	0	18.5	7.5	0	17	7.5	0	17.5
Mar	3.5	0	9.5	3.5	0	10	10.5	3.5	19.5
Apr	0	0	0	3.5	0	10	3.5	0	10
May	3.5	0	11.5	3.5	0	10	3.5	0	10
Jun	3.5	0	10.5	36	0	108.5	57.5	0	161
Jul	0	0	0	0	0	0	3.5	0	10
Aug	0	0	0	3.5	0	10	10.5	0	27
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0.5	0	1
Nov	3.5	0	10	10	0	29	10	0	30
Dec	0	0	0	5.5	0	13.5	7	0	17.5

Table A1.11.6 Herring gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0.02	0	0.04
Feb	0.08	0	0.20	0.04	0	0.08	0.02	0	0.05
Mar	0.04	0	0.10	0.02	0	0.05	0.03	0.01	0.05
Apr	0	0	0	0.02	0	0.05	0.01	0	0.03
May	0.04	0	0.12	0.02	0	0.05	0.01	0	0.03
Jun	0.04	0	0.11	0.16	0	0.49	0.16	0	0.44
Jul	0	0	0	0	0	0	0.01	0	0.03
Aug	0	0	0	0.02	0	0.05	0.03	0	0.07
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0.04	0	0.10	0.05	0	0.13	0.03	0	0.08
Dec	0	0	0	0.03	0	0.06	0.02	0	0.05

A1.12 Kittiwake

Table A1.12.1 Kittiwake design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	131	61	226	415	210	687	631	374	916
Feb	361	59	877	604	183	1,277	1,355	537	2,373
Mar	177	92	266	382	276	477	566	419	730
Apr	25	10	40	114	39	225	265	117	456
May	43	21	69	139	46	270	244	128	381
Jun	39	13	70	255	77	539	381	147	688
Jul	33	6	69	67	33	106	149	66	260
Aug	14	0	33	37	3	87	79	26	141
Sep	11	0	22	36	6	77	57	17	102
Oct	7	0	14	33	25	42	105	39	194
Nov	66	17	128	135	77	189	278	163	397
Dec	48	18	88	467	97	1,095	803	187	1,762

Table A1.12.2 Kittiwake design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	1.37	0.63	2.36	1.87	0.95	3.10	1.70	1.01	2.47
Feb	3.77	0.61	9.19	2.73	0.83	5.76	3.65	1.45	6.38
Mar	1.84	0.96	2.78	1.72	1.24	2.15	1.52	1.13	1.97
Apr	0.26	0.10	0.41	0.52	0.18	1.01	0.71	0.32	1.23
May	0.44	0.22	0.72	0.63	0.20	1.22	0.66	0.35	1.03
Jun	0.41	0.13	0.73	1.15	0.35	2.43	1.02	0.40	1.85
Jul	0.34	0.06	0.72	0.30	0.15	0.48	0.40	0.18	0.70
Aug	0.14	0	0.33	0.17	0.02	0.39	0.21	0.07	0.38
Sep	0.11	0	0.23	0.16	0.03	0.34	0.16	0.04	0.27
Oct	0.07	0	0.14	0.15	0.11	0.19	0.28	0.11	0.52
Nov	0.69	0.18	1.34	0.61	0.35	0.85	0.75	0.44	1.07
Dec	0.50	0.18	0.91	2.11	0.44	4.94	2.16	0.50	4.74

Table A1.12.3 Kittiwake design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	71.5	32.5	129	261	137.5	421.5	379	234.5	541
Feb	128.5	6	338	264.5	72.5	579.5	652	180.5	1352
Mar	66	37.5	92.5	156.5	128.5	188	251.5	173.5	365
Apr	13.5	3.5	22.5	68.5	19.5	127.5	118	56	195
May	36	20	51	103.5	31.5	216.5	160	72	278
Jun	30	9	54	87	47.5	135	134	75.5	203
Jul	23	3.5	48	53	25.5	85.5	130.5	52.5	238
Aug	10.5	0	22.5	23	3	48.5	44.5	16.5	75.5
Sep	3.5	0	9.5	6.5	0	15.5	10	0	19.5
Oct	0	0	0	10	3	19.5	51.5	6.5	113.5
Nov	46.5	12	84.5	101.5	59.5	140.5	184.5	112	257
Dec	38.5	7.5	78.5	121.5	58.5	193	227	122.5	340

Table A1.12.4 Kittiwake design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.75	0.33	1.35	1.18	0.62	1.90	1.02	0.63	1.46
Feb	1.35	0.06	3.54	1.19	0.33	2.62	1.76	0.49	3.64
Mar	0.69	0.39	0.96	0.71	0.58	0.85	0.68	0.47	0.98
Apr	0.14	0.03	0.23	0.31	0.09	0.58	0.32	0.15	0.53
May	0.38	0.21	0.53	0.47	0.14	0.98	0.43	0.20	0.75
Jun	0.31	0.09	0.56	0.39	0.22	0.61	0.36	0.21	0.55
Jul	0.24	0.04	0.51	0.24	0.12	0.39	0.35	0.14	0.64
Aug	0.11	0	0.23	0.11	0.02	0.22	0.12	0.04	0.21
Sep	0.04	0	0.10	0.03	0	0.07	0.03	0	0.05
Oct	0	0	0	0.05	0.02	0.09	0.14	0.02	0.30
Nov	0.48	0.12	0.88	0.46	0.27	0.63	0.50	0.30	0.70
Dec	0.40	0.08	0.82	0.55	0.26	0.87	0.61	0.33	0.91

Table A1.12.5 Kittiwake design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	59	13	120	146	51	277	256	105	435
Feb	229	39	516	340	86	704	706	302	1,183
Mar	111	51	170	226	135	308	314	207	419
Apr	13	4	22	43	11	94	144	44	276
May	7	0	22	37	3	80	88	33	150
Jun	10	0	29	167	7	451	252	35	558
Jul	10	0	23	14	0	34	18	4	37
Aug	4	0	10	14	0	39	35	7	74
Sep	7	0	20	31	0	75	47	10	96
Oct	7	0	15	24	17	30	55	28	90
Nov	20	4	43	33	14	54	92	36	158
Dec	10	1	22	334	20	862	607	47	1,493

Table A1.12.6 Kittiwake design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.61	0.13	1.26	0.66	0.23	1.25	0.69	0.28	1.17
Feb	2.39	0.41	5.40	1.53	0.39	3.18	1.90	0.82	3.18
Mar	1.15	0.53	1.78	1.02	0.61	1.38	0.84	0.56	1.13
Apr	0.12	0.04	0.23	0.19	0.05	0.42	0.39	0.12	0.74
May	0.07	0	0.23	0.17	0.02	0.36	0.23	0.09	0.41
Jun	0.10	0	0.30	0.75	0.03	2.03	0.68	0.10	1.50
Jul	0.11	0	0.23	0.06	0	0.15	0.05	0.01	0.10
Aug	0.04	0	0.10	0.06	0	0.17	0.10	0.02	0.20
Sep	0.07	0	0.20	0.14	0	0.34	0.13	0.03	0.26
Oct	0.07	0	0.15	0.11	0.08	0.14	0.15	0.08	0.24
Nov	0.20	0.04	0.44	0.15	0.06	0.24	0.25	0.10	0.43
Dec	0.10	0	0.22	1.50	0.09	3.89	1.63	0.13	4.02

A1.13 Lesser black-backed gull

Table A1.13.1 Lesser black-backed gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	4	0	10	44	0	108
Feb	18	0	45	46	10	107	52	10	123
Mar	0	0	0	10	0	28	44	0	108
Apr	76	6	206	470	56	1,149	585	121	1,336
May	4	0	12	59	10	122	83	20	165
Jun	69	13	148	393	56	993	673	99	1,711
Jul	7	0	20	27	7	50	72	23	129
Aug	0	0	0	54	9	122	121	20	240
Sep	7	0	26	78	0	193	88	4	200
Oct	0	0	0	1	0	2	5	0	13
Nov	0	0	0	4	0	10	4	0	11
Dec	0	0	0	0	0	0	18	0	50

Table A1.13.2 Lesser black-backed gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.12	0	0.29
Feb	0.19	0	0.47	0.21	0.05	0.48	0.14	0.03	0.33
Mar	0	0	0	0.05	0	0.12	0.07	0	0.18
Apr	0.79	0.06	2.15	2.12	0.26	5.18	1.57	0.32	3.59
May	0.04	0	0.12	0.27	0.05	0.55	0.23	0.06	0.44
Jun	0.72	0.13	1.54	1.77	0.25	4.48	1.81	0.27	4.60
Jul	0.07	0	0.20	0.12	0.03	0.23	0.19	0.06	0.35
Aug	0	0	0	0.24	0.04	0.55	0.33	0.05	0.65
Sep	0.07	0	0.27	0.35	0	0.87	0.23	0.01	0.54
Oct	0	0	0	0.01	0	0.01	0.01	0	0.04
Nov	0	0	0	0.02	0	0.05	0.01	0	0.03
Dec	0	0	0	0	0	0	0.05	0	0.14

Table A1.13.3 Lesser black-backed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	3.50	0.00	10.50
Feb	13.5	0	31.5	33	3.5	81	40	3.5	101
Mar	0	0	0	7	0	20	7	0	16.5
Apr	13	3	29	42	9.5	95	84.5	27.5	176
May	3.5	0	11.5	55.5	6.5	116.5	81	13.5	164
Jun	30	6	63.5	98.5	31	177	141	53.5	243
Jul	7	0	19	17	3.5	33	34.5	13	58.5
Aug	0	0	0	17	3.5	34.5	28	7	52
Sep	7	0	24.5	16.5	0	49	16.5	0	49.5
Oct	0	0	0	1	0	2	1	0	2
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	3.5	0	10.5

Table A1.13.4 Lesser black-backed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0.01	0	0.03
Feb	0.14	0	0.33	0.15	0.02	0.37	0.11	0.01	0.27
Mar	0	0	0	0.03	0	0.09	0.07	0	2.67
Apr	0.14	0.03	0.31	0.19	0.04	0.43	0.23	0.08	0.48
May	0.04	0	0.12	0.25	0.03	0.53	0.22	0.04	0.44
Jun	0.31	0.06	0.66	0.44	0.14	0.80	0.38	0.15	0.66
Jul	0.07	0	0.20	0.08	0.02	0.15	0.09	0.04	0.16
Aug	0	0	0	0.08	0.02	0.16	0.07	0.02	0.14
Sep	0.07	0	0.25	0.08	0	0.22	0.05	0	0.13
Oct	0	0	0	0.01	0	0.01	0	0	0.01
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0.01	0	0.03

Table A1.13.5 Lesser black-backed gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	4	0	10	40	0	102
Feb	5	0	15	11	0	25	13	0	29
Mar	0	0	0	4	0	10	4	0	10
Apr	62	0	197	417	33	1,074	505	74	1,193
May	0	0	0	4	0	10	4	0	10
Jun	40	7	94	294	17	815	540	30	1,488
Jul	0	0	0	7	0	20	39	4	82
Aug	0	0	0	37	6	84	96	13	198
Sep	0	0	0	61	3	164	69	4	184
Oct	0	0	0	0	0	0	4	0	11
Nov	0	0	0	4	0	10	4	0	10
Dec	0	0	0	0	0	0	15	0	41

Table A1.13.6 Lesser black-backed gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.02	0	0.05	0.11	0	0.27
Feb	0.05	0	0.15	0.05	0	0.11	0.04	0	0.08
Mar	0	0	0	0.02	0	0.05	0.01	0	0.03
Apr	0.65	0	2.06	1.88	0.15	4.84	1.36	0.20	3.21
May	0	0	0	0.02	0	0.05	0.01	0	0.03
Jun	0.41	0.07	0.99	1.33	0.08	3.68	1.58	0.16	4.18
Jul	0	0	0	0.03	0	0.09	0.17	0.05	0.30
Aug	0	0	0	0.17	0.03	0.38	0.26	0.04	0.53
Sep	0	0	0	0.28	0.02	0.74	0.18	0.01	0.49
Oct	0	0	0	0	0	0	0.01	0	0.03
Nov	0	0	0	0.02	0	0.05	0.01	0	0.03
Dec	0	0	0	0	0	0	0.04	0	0.11

A1.14 Little gull

Table A1.14.1 Little gull design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	7	0	16	10	0	22	17	0.5	38.5
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	3.5	0	9	23.5	3	54.5	58	10.5	119
Nov	3.5	0	10	3.5	0	10	14.5	0	36
Dec	0	0	0	0	0	0	0	0	0

Table A1.14.2 Little gull design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.07	0	0.17	0.05	0	0.10	0.05	0	0.11
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.04	0	0.10	0.11	0.02	0.25	0.16	0.03	0.32
Nov	0.04	0	0.10	0.02	0	0.05	0.04	0	0.10
Dec	0	0	0	0	0	0	0	0	0

Table A1.14.3 Little gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	6.5	0	16.5	10	0	23	17	0.5	39
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	3.5	0	10	23.5	3.5	54
Nov	3.5	0	10	3.5	0	9.5	11	0	31
Dec	0	0	0	0	0	0	0	0	0

Table A1.14.4 Little gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0.07	0	0.17	0.05	0	0.11	0.05	0	0.11
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0.02	0	0.05	0.07	0.01	0.15
Nov	0.04	0	0.10	0.02	0	0.05	0.03	0	0.08
Dec	0	0	0	0	0	0	0	0	0

Table A1.14.5 Little gull design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	3.5	0	9	19.5	3	43	34.5	10	63.5
Nov	0	0	0	0	0	0	3.5	0	10
Dec	0	0	0	0	0	0	0	0	0

Table A1.14.6 Little gull design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.04	0	0.10	0.09	0.02	0.20	0.09	0.03	0.17
Nov	0	0	0	0	0	0	0.01	0	0.03
Dec	0	0	0	0	0	0	0	0	0

A1.15 Puffin

Table A1.15.1 Puffin design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	1	0	1	1	0	2	5	1	15
Apr	3	0	6	3	0	6	6	0	16
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.15.2 Puffin design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0.01	0	0.01	0	0	0.01	0.01	0	0.04
Apr	0.02	0	0.06	0.01	0	0.03	0.02	0	0.04
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.15.3 Puffin design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.15.4 Puffin design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.15.5 Puffin design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0.5	0	1	0.5	0	1.5	4.5	0.5	15
Apr	2.5	0	6	2.5	0	6	6	0	15.5
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.15.6 Puffin design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0.01	0	0.01	0	0	0.01	0.01	0	0.04
Apr	0.02	0	0.06	0.01	0	0.03	0.02	0	0.04
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A1.16 Razorbill

Table A1.16.1 Razorbill design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	361	124	658	738	306	1,312	1,085	581	1,687
Feb	1,148	387	2,225	1,715	624	3,220	2,567	1,278	4,240
Mar	213	130	302	383	251	535	647	446	881
Apr	26	11	42	100	47	179	195	76	382
May	5	0	11	5	0	12	49	5	108
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	5	0	12	12	0	38
Sep	5	0	11	5	0	13	6	1	15
Oct	99	23	210	249	86	446	360	138	640
Nov	200	77	364	331	164	543	635	409	928
Dec	716	470	974	1,782	1,243	2,504	3,577	2,499	4,827

Table A1.16.2 Razorbill design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	3.78	1.29	6.90	3.33	1.38	5.92	2.91	1.56	4.53
Feb	12.01	4.04	23.32	7.74	2.81	14.53	6.91	3.44	11.41
Mar	2.23	1.36	3.15	1.73	1.13	2.42	1.74	1.20	2.37
Apr	0.27	0.11	0.44	0.45	0.21	0.81	0.53	0.20	1.03
May	0.05	0	0.11	0.02	0	0.06	0.13	0.01	0.29
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0.02	0	0.06	0.03	0	0.10
Sep	0.05	0	0.11	0.02	0	0.06	0.02	0	0.04
Oct	1.03	0.23	2.19	1.12	0.40	2.02	0.96	0.37	1.72
Nov	2.08	0.80	3.82	1.49	0.74	2.45	1.71	1.10	2.50
Dec	7.49	4.92	10.20	8.03	5.60	11.29	9.62	6.72	12.98

Table A1.16.3 Razorbill design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	4	0	10	11	0	27	16	0	37
Feb	64	28	105	130	62	215	163	87	251
Mar	0	0	0	0	0	0	4	0	10
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	13	0	33	14	0	38	27	0	65
Nov	0	0	0	7	0	20	7	0	20
Dec	4	0	10	12	1	26	18	4	39

Table A1.16.4 Razorbill design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0.04	0	0.11	0.05	0	0.12	0.04	0	0.10
Feb	0.66	0.28	1.10	0.59	0.28	0.97	0.44	0.23	0.68
Mar	0	0	0	0	0	0	0.01	0	0.03
Apr	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0.14	0	0.34	0.06	0	0.17	0.07	0	0.18
Nov	0	0	0	0.03	0	0.09	0.02	0	0.06
Dec	0.04	0	0.10	0.05	0	0.12	0.05	0.01	0.10

Table A1.16.5 Razorbill design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	358	124	648	727	306	1,285	1,069	581	1,650
Feb	1,084	359	2,121	1,585	562	3,006	2,404	1,191	3,990
Mar	213	130	302	383	251	535	644	446	871
Apr	26	11	42	100	47	179	195	76	382
May	5	0	11	5	0	12	49	5	108
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	5	0	12	12	0	38
Sep	5	0	11	5	0	13	6	1	15
Oct	86	23	177	235	86	409	333	138	575
Nov	200	77	364	324	164	523	628	409	908
Dec	712	470	965	1,771	1,243	2,479	3,559	2,495	4,789

Table A1.16.6 Razorbill design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	3.75	1.29	6.79	3.28	1.38	5.80	2.87	1.56	4.44
Feb	11.35	3.76	22.22	7.15	2.54	13.56	6.47	3.21	10.74
Mar	2.23	1.36	3.15	1.73	1.13	2.42	1.73	1.20	2.34
Apr	0.27	0.11	0.44	0.45	0.21	0.81	0.53	0.20	1.03
May	0.05	0	0.11	0.02	0	0.06	0.13	0.01	0.29
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0.02	0	0.06	0.03	0	0.10
Sep	0.05	0	0.11	0.02	0	0.06	0.02	0	0.04
Oct	0.89	0.23	1.85	1.06	0.40	1.85	0.89	0.37	1.54
Nov	2.08	0.80	3.82	1.46	0.74	2.36	1.69	1.10	2.44
Dec	7.46	4.92	10.11	7.98	5.60	11.18	9.58	6.71	12.88

A1.17 Red-throated diver

Table A1.17.1-Red-throated diver design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	12.5	2	27.5	17	3.5	34.5	130	60	213
Feb	12.5	3.5	20	42	10	92	58	19.5	106.5	716	376	1,067
Mar	3.5	0	9.5	7	0	15	24	3.5	53	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	3.5	0	8.5	7	0	16	10.5	0	26	n/a	n/a	n/a

Table A1.17.2 Red-throated diver design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.06	0.01	0.12	0.05	0.01	0.09	0.16	0.07	0.27
Feb	0.13	0.04	0.21	0.19	0.05	0.42	0.16	0.05	0.29	0.91	0.47	1.35
Mar	0.04	0	0.10	0.03	0	0.07	0.07	0.01	0.14	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	0.04	0	0.09	0.03	0	0.07	0.03	0	0.07	n/a	n/a	n/a

Table A1.17.3 Red-throated diver design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	26	0	57
Mar	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	3.5	0	8.5	3.5	0	9.5	3.5	0	10	n/a	n/a	n/a

Table A1.17.4 Red-throated diver design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0.03	0	0.07
Mar	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	0.03	0	0.09	0.02	0	0.04	0.01	0	0.03	n/a	n/a	n/a

Table A1.17.5 Red-throated diver design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	12.5	2	28.5	17	3.5	34	130	56	218
Feb	12.5	3.5	20	41	10	82	59	19	109.5	678	370	991
Mar	3.5	0	9.5	7	0	15.5	23.5	3.5	52	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	0	0	0	3.5	0	12	7.5	0	20.5	n/a	n/a	n/a

Table A1.17.6 Red-throated diver design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0.06	0.01	0.13	0.05	0.01	0.09	0.16	0.07	0.28
Feb	0.16	0.04	0.21	0.19	0.05	0.37	0.16	0.05	0.30	0.86	0.47	1.25
Mar	0.04	0	0.10	0.03	0	0.07	0.07	0.01	0.14	n/a	n/a	n/a
Apr	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec	0	0	0	0.02	0	0.05	0.02	0	0.05	n/a	n/a	n/a

A1.18 Sandwich tern

Table A1.18.1 Sandwich tern design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	6.5	0	16	10.5	0	26.5
May	0	0	0	3.5	0	10	10.5	0	24.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	7	0	19.5	7	0	19	7.5	0	20
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.18.2 Sandwich tern design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0.03	0	0.07	0.03	0	0.07
May	0	0	0	0.02	0	0.05	0.03	0	0.07
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0.07	0	0.21	0.03	0	0.09	0.02	0	0.06
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.18.3 Sandwich tern design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	6.5	0	16	7	0	17
May	0	0	0	3.5	0	10	10	0	25.5
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	6.5	0	19.5	7	0	19	7	0	20
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.18.4 Sandwich tern design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0.03	0	0.07	0.02	0	0.05
May	0	0	0	0.02	0	0.05	0.03	0	0.07
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0.07	0	0.21	0.03	0	0.09	0.02	0	0.06
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.18.5 Sandwich tern design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	3.5	0	10
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

Table A1.18.6 Sandwich tern design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Jan	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0.01	0	0.03
May	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0

A2 Annex 2 Seabird abundance and density by survey

A2.1 Arctic skua

Table A2.1.1 Arctic skua design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	**LCL**	**UCL**	**SD**	**CV**	**Mean**	**LCL**	**UCL**	**SD**	**CV**	**Mean**	**LCL**	**UCL**	**SD**	**CV**
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	97.32%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.1.2 Arctic skua design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.1.3 Arctic skua design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	97.69%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.1.4 Arctic skua design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.1.5 Arctic skua design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.1.6 Arctic skua design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.2 Black-headed gull

Table A2.2.1 Black-headed gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	20	7	92.50%	14	0	31	9	61.15%	27	0	57	14	52.08%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	7	0	19	6	82.50%	7	0	20	6	92.37%	7	0	20	7	91.94%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	7	0	19	6	88.25%	13	0	27	8	55.09%	14	0	31	8	58%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	1	0	1	1	94.21%	35	1	96	30	85.45%	35	1	101	31	87.51%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	14	0	38	12	86.69%	14	0	39	12	86.26%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	7	0	21	7	90.32%	7	0	20	6	84.72%	7	0	20	7	90.03%

Table A2.2.2 Black-headed gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.2	0.06	0	0.14	0.07	0	0.15
Apr-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
May-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-19	0.07	0	0.19	0.03	0	0.09	0.02	0	0.05
Aug-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct-19	0.07	0	0.2	0.06	0	0.12	0.04	0	0.08
Nov-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apr-20	0.00	0.00	0.00	0.16	0	0.43	0.09	0	0.27
May-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-20	0.00	0.00	0.00	0.06	0	0.17	0.04	0	0.1
Aug-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb-21	0.07	0	0.22	0.03	0	0.09	0.02	0	0.05

Table A2.2.3 Black-headed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	20	6	87.24%	14	0	31	8	60.34%	28	0	58	14	50.76%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	7	0	19	6	82.47%	7	0	20	6	84.37%	8	0	20	6	82.12%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	7	0	20	7	96.90%	14	0	26	7	51.95%	14	0	31	8	59.88%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	33	0	95	28	86.28%	33	0	99	30	90.08%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	14	0	38	12	89.92%	14	0	40	13	93.15%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	7	0	19	6	93.88%	7	0	20	6	85.76%	7	0	20	6	91.59%

Table A2.2.4 Black-headed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0.06	0	0.14	0.07	0	0.15
Apr-19	0.06	0	0.2	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.06	0	0.12	0.04	0	0.08
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.15	0	0.43	0.09	0	0.26
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0.06	0	0.17	0.04	0	0.11
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0.07	0	0.2	0.03	0	0.09	0.02	0	0.05

Table A2.2.5 Black-headed gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	1	0	1	1	90.30%	1	0	1	1	53.02%	1	1	2	1	32.21%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.2.6 Black-headed gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.3 Common gull

Table A2.3.1 Common gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	7	0	19	6	86.71%	14	0	27	8	54.27%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	1	0	1	1	95.29%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	7	0	20	7	95.25%	7	0	20	7	89.70%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	90.74%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	1	0	1	1	86.72%	1	0	1	1	87.70%
Feb-20	15	0	43	13	81.66%	16	0	44	14	85.19%	50	14	92	22	42.59%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	99.10%
Apr-20	41	6	90	23	55.29%	123	51	206	41	33.43%	404	181	690	135	33.35%
May-20	0	0	0	0	0.00%	7	0	19	6	85.65%	7	0	20	7	92.77%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	1	0	2	1	70.52%	1	0	2	1	85.76%	15	1	32	9	56.94%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	7	0	17	5	75.26%	8	0	21	7	89.82%	15	0	32	9	56.64%

Table A2.3.2 Common gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0.03	0	0.08	0.04	0	0.07
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Nov-19	0	0	0	0	0	0	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0.16	0	0.44	0.07	0	0.2	0.13	0.04	0.25
Mar-20	0	0	0	0	0	0	0.02	0	0.05
Apr-20	0.43	0.05	0.94	0.55	0.23	0.93	1.09	0.49	1.86
May-20	0	0	0	0.03	0	0.08	0.02	0	0.05
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0.01	0	0	0.01	0.04	0	0.09
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0.07	0	0.18	0.03	0	0.09	0.04	0	0.09

Table A2.3.3 Common gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	7	0	19	6	87.85%	14	0	30	8	57.75%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	7	0	20	6	90.54%	7	0	20	7	87.82%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	94.02%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	1	0	1	1	89.02%	1	0	1	1	88.04%
Feb-20	7	0	19	6	79.52%	7	0	19	6	92.65%	20	0	46	12	60.27%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	96.95%
Apr-20	21	0	58	19	89.12%	74	12	161	40	54.06%	142	40	260	59	41.15%
May-20	0	0	0	0	0.00%	7	0	19	6	86.21%	7	0	20	7	89.64%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	7	89.44%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	5	76.19%	0	0	0	6	85.73%	0	0	0	8	57.14%
Feb-21	7	0	17	0	0.00%	7	0	20	6	87.85%	14	0	31	8	57.75%

Table A2.3.4 Common gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0.03	0	0.09	0.04	0	0.08
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.03	0	0.09	0	0	0
Nov-19	0	0	0	0	0	0	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0.07	0	0.19	0.03	0	0.08	0.05	0	0.12
Mar-20	0	0	0	0	0	0	0.02	0	0.05
Apr-20	0.21	0	0.61	0.33	0.05	0.72	0.38	0.11	0.7
May-20	0	0	0	0.03	0	0.08	0.02	0	0.05
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0.07	0	0.17	0.03	0	0.09	0.04	0	0.08

Table A2.3.5 Common gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	1	0	1	1	94.53%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	9	0	25	8	82.42%	9	0	26	8	87.04%	30	1	70	19	61.17%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	23	5	43	10	44.23%	48	24	74	14	28.56%	258	91	470	98	37.75%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	1	0	2	1	73.11%	1	0	2	1	87.43%	8	0	21	6	80.22%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	1	0	1	1	86.13%	1	0	1	1	89.42%

Table A2.3.6 Common gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0.09	0	0.26	0.04	0	0.11	0.08	0	0.19
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0.23	0.05	0.45	0.21	0.11	0.33	0.69	0.24	1.26
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0.01	0	0	0.01	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.4 Common tern

Table A2.4.1 Common tern design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	60	20	99.25%
Aug-19	13	0	39	12	89.48%	34	6	64	16	46.09%	61	19	114	25	40.79%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	40	0	113	35	86.51%	42	0	118	35	82.49%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	40	13	94.88%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	7	0	19	6	90.03%	7	0	20	6	88.26%	7	0	20	7	91.99%
Sep-20	0	0	0	0	0.00%	13	0	39	13	97.60%	14	0	40	12	89.32%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.4.2 Common tern design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0.05	0	0.16
Aug-19	0.13	0	0.4	0.15	0.03	0.29	0.16	0.05	0.3
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.18	0	0.51	0.11	0	0.32
May-20	0	0	0	0	0	0	0.04	0	0.11
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0.07	0	0.2	0.03	0	0.09	0.02	0	0.05
Sep-20	0	0	0	0.06	0	0.17	0.04	0	0.11
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.4.3 Common tern design-based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	21	0	60	20	94.76%
Aug-19	14	0	39	12	88.38%	33	6	65	16	47.16%	61	13	113	26	41.86%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	39	0	112	34	86.73%	40	0	118	36	89.31%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	40	13	91.53%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	7	0	19	6	86.68%	7	0	20	7	89.64%	7	0	21	7	91.51%
Sep-20	0	0	0	0	0.00%	14	0	40	13	95.21%	14	0	40	13	97%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.4.4 Common tern design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0.05	0	0.16
Aug-19	0.14	0	0.4	0.15	0.03	0.29	0.16	0.03	0.3
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.17	0	0.5	0.11	0	0.32
May-20	0	0	0	0	0	0	0.04	0	0.11
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0.07	0	0.2	0.03	0	0.09	0.02	0	0.05
Sep-20	0	0	0	0.06	0	0.18	0.04	0	0.11
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.4.5 Common tern design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.4.6 Common tern design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.5 Cormorant

Table A2.5.1 Cormorant design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	59	18	91.48%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.5.2 Cormorant design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0.05	0	0.16
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.5.3 Cormorant design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	60	19	92.79%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.5.4 Cormorant design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0.05	0	0.16
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.5.5 Cormorant design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.5.6 Cormorant design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.6 Fulmar

Table A2.6.1 Fulmar design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	27	13	38	7	24.40%	45	19	76	15	32.61%	61	38	87	13	20.52%
Apr-19	13	0	36	11	86.61%	21	0	46	13	61.23%	41	13	72	16	37.87%
May-19	0	0	0	0	0.00%	26	6	51	13	46.89%	96	33	181	40	41.57%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	98.01%
Oct-19	7	0	19	6	81.26%	7	0	20	6	88.12%	7	0	20	7	89.80%
Nov-19	0	0	0	0	0.00%	7	0	19	6	86.03%	20	0	47	13	61.31%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	7	0	20	7	92.34%	7	0	21	7	97.87%
Feb-20	21	0	55	15	69.48%	20	0	51	13	65.48%	21	0	47	14	65.33%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	7	0	16	5	72.29%	13	0	38	11	87.47%	14	0	40	12	86.50%
May-20	0	0	0	0	0.00%	91	0	208	55	60.88%	159	13	366	92	57.92%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	7	0	20	6	95.66%	7	0	20	7	89.65%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	4	0	10	4	94.08%	7	0	16	4	59.30%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.6.2 Fulmar design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.27	0.13	0.39	0.2	0.08	0.34	0.16	0.1	0.23
Apr-19	0.13	0	0.37	0.09	0	0.2	0.11	0.03	0.19
May-19	0	0	0	0.12	0.03	0.23	0.26	0.09	0.49
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0.02	0	0.05
Oct-19	0.07	0	0.19	0.03	0	0.09	0.02	0	0.05
Nov-19	0	0	0	0.03	0	0.08	0.05	0	0.12
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Feb-20	0.21	0	0.58	0.09	0	0.23	0.05	0	0.13
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0.07	0	0.17	0.06	0	0.17	0.04	0	0.11
May-20	0	0	0	0.41	0	0.94	0.43	0.03	0.98
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0.01	0	0.04	0.02	0	0.04
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.6.3 Fulmar design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	17	5	74.51%	26	6	58	15	55.63%	28	0	63	16	55.60%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	25	7	102.96%
May-19	0	0	0	0	0.00%	13	0	38	12	87.20%	43	0	118	36	84.48%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	97.27%
Oct-19	7	0	18	6	80.14%	7	0	20	6	87.91%	7	0	20	6	89.25%
Nov-19	0	0	0	0	0.00%	7	0	19	6	83.73%	7	0	20	6	86.03%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	7	0	20	6	91.87%	7	0	20	7	91.09%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	7	0	16	5	74.52%	13	0	38	12	85.64%	14	0	40	12	85.34%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	27	6	57	15	54.54%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.6.4 Fulmar design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.17	0.12	0.03	0.26	0.07	0	0.17
Apr-19	0	0	0	0	0	0	0.02	0	0.06
May-19	0	0	0	0.06	0	0.17	0.11	0	0.32
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0.02	0	0.05
Oct-19	0.07	0	0.19	0.03	0	0.09	0.02	0	0.05
Nov-19	0	0	0	0.03	0	0.08	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0.07	0	0.17	0.06	0	0.17	0.04	0	0.11
May-20	0	0	0	0	0	0	0.07	0.02	0.15
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.6.5 Fulmar design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	20	12	29	5	23.67%	20	6	33	8	38.15%	34	20	48	8	22.62%
Apr-19	13	0	37	12	91.85%	21	0	50	13	64.35%	34	7	65	15	43.06%
May-19	0	0	0	0	0.00%	14	0	32	9	63.51%	54	26	85	16	28.33%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	15	0	40	13	85.32%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	20	0	54	14	70.32%	20	0	50	14	68.14%	20	0	49	13	63.99%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	90	0	204	52	57.44%	131	7	298	77	58.88%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	7	0	20	7	97.23%	7	0	20	7	93.88
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	4	0	10	3	92.76%	7	0	16	5	62.23%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.6.6 Fulmar design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.2	0.12	0.3	0.09	0.03	0.15	0.09	0.05	0.13
Apr-19	0.13	0	0.39	0.09	0	0.22	0.09	0.02	0.17
May-19	0	0	0	0.06	0	0.14	0.14	0.07	0.23
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0.04	0	0.11
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0.21	0	0.56	0.09	0	0.22	0.05	0	0.13
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0.41	0	0.92	0.35	0.02	0.8
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0.01	0	0.04	0.02	0	0.04
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.7 Gannet

Table A2.7.1 Gannet design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	27	0	76	22	82.72%	78	13	179	45	56.70%	113	39	223	49	43.34%
Apr-19	7	0	18	6	83.01%	40	7	84	20	49.84%	60	19	114	26	42.01%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	94.01%
Jun-19	8	0	24	7	87.63%	14	0	27	7	51.43%	21	7	39	9	43.50%
Jul-19	26	6	52	13	48.43%	27	7	52	12	43.85%	54	20	93	20	35.44%
Aug-19	21	0	47	13	61.64%	60	23	105	22	36.35%	62	20	113	24	38.45%
Sep-19	0	0	0	0	0.00%	7	0	19	6	86.83%	33	7	66	16	46.07%
Oct-19	39	13	65	14	35.47%	91	26	176	39	42.91%	196	74	329	66	33.28%
Nov-19	215	107	316	55	25.55%	430	263	608	89	20.51%	707	502	913	105	14.76%
Dec-19	0	0	0	0	0.00%	47	18	88	19	40.22%	108	32	210	49	44.98%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	60	20	98.30%
Feb-20	207	29	502	123	59.64%	313	70	657	157	50.12%	464	176	863	177	38.14%
Mar-20	0	0	0	0	0.00%	7	0	23	7	100.62%	7	0	25	7	96.29%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	7	0	19	6	83.71%	60	6	152	43	71.32%	93	20	189	45	47.82%
Jun-20	0	0	0	0	0.00%	28	6	58	14	50.91%	28	7	59	15	51.91%
Jul-20	0	0	0	0	0.00%	26	0	59	15	59.49%	47	13	80	18	38.57%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	27	0	64	17	62.78%	52	12	104	24	46.05%	116	38	230	48	41.20%
Oct-20	39	13	72	15	38.87%	84	19	160	37	44.50%	150	59	250	49	32.79%
Nov-20	86	38	142	27	31.67%	144	100	187	23	15.93%	278	207	349	37	13.26%
Dec-20	31	6	68	18	55.35%	267	13	658	175	65.62%	439	78	921	219	49.78%
Jan-21	20	0	50	14	68.32%	46	12	92	21	45.12%	54	13	108	26	46.96%
Feb-21	0	0	0	0	0.00%	7	0	20	7	94.64%	48	0	105	28	57.70%

Table A2.7.2 Gannet design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.28	0	0.79	0.35	0.06	0.8	0.3	0.1	0.6
Apr-19	0.06	0	0.18	0.18	0.03	0.38	0.16	0.05	0.31
May-19	0	0	0	0	0	0	0.02	0	0.05
Jun-19	0.07	0	0.24	0.06	0	0.12	0.05	0.02	0.1
Jul-19	0.27	0.05	0.54	0.12	0.03	0.23	0.14	0.05	0.25
Aug-19	0.22	0	0.49	0.27	0.1	0.47	0.17	0.05	0.3
Sep-19	0	0	0	0.03	0	0.09	0.09	0.02	0.18
Oct-19	0.4	0.13	0.68	0.41	0.12	0.79	0.53	0.2	0.88
Nov-19	2.25	1.11	3.3	1.94	1.18	2.74	1.9	1.35	2.45
Dec-19	0	0	0	0.21	0.08	0.39	0.29	0.08	0.56
Jan-20	0	0	0	0	0	0	0.05	0	0.16
Feb-20	2.16	0.3	5.25	1.41	0.32	2.96	1.25	0.47	2.32
Mar-20	0	0	0	0.03	0	0.1	0.02	0	0.06
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0.07	0	0.19	0.27	0.03	0.68	0.25	0.05	0.51
Jun-20	0	0	0	0.12	0.03	0.26	0.07	0.02	0.16
Jul-20	0	0	0	0.11	0	0.26	0.12	0.03	0.21
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0.28	0	0.66	0.23	0.05	0.47	0.31	0.1	0.62
Oct-20	0.4	0.13	0.75	0.37	0.09	0.72	0.4	0.16	0.67
Nov-20	0.89	0.39	1.48	0.65	0.45	0.84	0.75	0.56	0.94
Dec-20	0.32	0.05	0.71	1.2	0.06	2.97	1.18	0.21	2.48
Jan-21	0.21	0	0.52	0.21	0.05	0.41	0.14	0.03	0.29
Feb-21	0	0	0	0.03	0	0.09	0.13	0	0.28

Table A2.7.3 Gannet design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	19	6	83.89%	20	0	44	12	58.83%	54	14	93	21	37.43%
Apr-19	0	0	0	0	0.00%	14	0	33	9	67.51%	14	0	33	9	62.49%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	6	88.80%
Jun-19	7	0	20	7	90.18%	7	0	20	6	87.71%	14	0	30	8	59.70%
Jul-19	14	0	39	12	91.44%	14	0	40	13	89.13%	21	0	47	13	62.44%
Aug-19	7	0	21	7	93.32%	21	6	38	9	42.40%	21	7	39	10	45.31%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	44	11	52.92%
Oct-19	28	0	59	15	54.39%	46	13	79	18	38.03%	122	53	196	37	29.95%
Nov-19	53	26	83	16	29.36%	125	74	179	28	22.18%	211	156	268	29	13.58%
Dec-19	0	0	0	0	0.00%	33	7	63	14	43.63%	82	14	172	42	50.39%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	40	13	90.29%
Feb-20	59	0	137	37	62.82%	119	44	201	43	36.03%	183	84	287	54	29.41%
Mar-20	0	0	0	0	0.00%	7	0	25	7	102.16%	7	0	26	7	102.05%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	7	0	19	6	86.80%	40	0	84	21	52.87%
Jun-20	7	0	19	6	90.64%	13	0	26	8	55.81%	14	0	32	9	60.79%
Jul-20	0	0	0	0	0.00%	14	0	39	12	91.28%	35	7	69	17	48.23%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	7	0	20	6	85.58%	33	7	64	16	47.34%	94	24	201	49	51.84%
Oct-20	13	0	26	8	55.12%	39	6	80	20	50.24%	81	34	132	25	30.34%
Nov-20	61	20	112	25	39.93%	99	56	139	23	22.61%	204	125	285	42	20.12%
Dec-20	6	0	19	6	106.12%	81	0	234	74	91.10%	143	13	343	92	64.07%
Jan-21	14	0	40	13	93.60%	40	7	82	20	49.45%	42	12	85	19	45.97%
Feb-21	0	0	0	0	0.00%	7	0	20	7	92.02%	48	0	111	28	58.04%

Table A2.7.4 Gannet design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.19	0.09	0	0.2	0.14	0.04	0.25
Apr-19	0	0	0	0.06	0	0.15	0.04	0	0.09
May-19	0	0	0	0	0	0	0.02	0	0.05
Jun-19	0.07	0	0.2	0.03	0	0.09	0.04	0	0.08
Jul-19	0.14	0	0.4	0.06	0	0.18	0.05	0	0.13
Aug-19	0.07	0	0.21	0.09	0.03	0.17	0.05	0.02	0.1
Sep-19	0	0	0	0	0	0	0.05	0	0.12
Oct-19	0.28	0	0.61	0.21	0.06	0.36	0.33	0.14	0.53
Nov-19	0.55	0.26	0.87	0.56	0.33	0.81	0.57	0.42	0.72
Dec-19	0	0	0	0.14	0.03	0.28	0.22	0.04	0.46
Jan-20	0	0	0	0	0	0	0.04	0	0.11
Feb-20	0.61	0	1.44	0.53	0.2	0.91	0.49	0.23	0.77
Mar-20	0	0	0	0.03	0	0.11	0.02	0	0.07
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0.03	0	0.08	0.11	0	0.22
Jun-20	0.07	0	0.2	0.06	0	0.12	0.04	0	0.08
Jul-20	0	0	0	0.06	0	0.17	0.09	0.02	0.19
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0.07	0	0.2	0.15	0.03	0.29	0.25	0.06	0.54
Oct-20	0.14	0	0.27	0.17	0.03	0.36	0.22	0.09	0.35
Nov-20	0.63	0.21	1.16	0.44	0.25	0.63	0.55	0.34	0.77
Dec-20	0.06	0	0.19	0.36	0	1.06	0.38	0.03	0.92
Jan-21	0.14	0	0.41	0.18	0.03	0.37	0.11	0.03	0.23
Feb-21	0	0	0	0.03	0	0.09	0.13	0	0.3

Table A2.7.5 Gannet design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	20	0	56	17	82.13%	61	12	132	34	54.61%	61	13	134	34	56.04%
Apr-19	7	0	18	6	79.16%	26	6	58	15	54.92%	48	13	87	19	39.92%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	7	0	20	6	86.91%	7	0	20	6	88.38%
Jul-19	14	0	26	7	52%	14	0	29	8	53.16%	35	13	61	14	37.66%
Aug-19	7	0	20	6	89.13%	33	0	72	19	57.86%	34	0	80	21	59.74%
Sep-19	0	0	0	0	0.00%	7	0	20	6	90.63%	14	0	39	12	85.44%
Oct-19	13	0	38	12	91.07%	46	0	105	29	63.41%	73	13	149	36	49.29%
Nov-19	157	62	236	45	28.57%	294	162	428	68	23.05%	497	344	654	82	16.32%
Dec-19	0	0	0	0	0.00%	13	0	30	8	60.13%	28	7	52	12	42.50%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	141	6	445	119	84.67%	187	26	465	129	68.67%	276	72	610	142	51.33%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	7	0	18	6	79.05%	53	0	142	42	79.93%	54	0	150	46	84.47%
Jun-20	0	0	0	0	0.00%	14	0	47	13	95.86%	14	0	40	13	94.38%
Jul-20	0	0	0	0	0.00%	13	0	39	12	92.01%	14	0	40	13	93.88%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	20	0	44	11	54.46%	20	0	44	12	59.26%	20	0	46	13	62.32%
Oct-20	26	12	46	10	35.83%	47	13	84	18	38.20%	61	20	106	23	36.87%
Nov-20	27	14	39	7	23.88%	46	19	79	15	32.64%	75	32	130	28	36.16%
Dec-20	25	0	62	17	65.97%	182	19	403	101	55.62%	297	39	608	145	48.62%
Jan-21	7	0	19	6	77.76%	7	0	20	6	93.35%	14	0	33	9	61.83%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0%

Table A2.7.6 Gannet design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Mar-19	0.21	0	0.58	0.27	0.05	0.59	0.16	0.03	0.36
Apr-19	0.07	0	0.19	0.12	0.03	0.26	0.13	0.03	0.23
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Jul-19	0.14	0	0.27	0.06	0	0.13	0.09	0.03	0.16
Aug-19	0.07	0	0.2	0.15	0	0.32	0.09	0	0.21
Sep-19	0	0	0	0.03	0	0.09	0.04	0	0.1
Oct-19	0.13	0	0.39	0.2	0	0.47	0.19	0.03	0.4
Nov-19	1.64	0.65	2.47	1.33	0.73	1.93	1.34	0.92	1.76
Dec-19	0	0	0	0.06	0	0.13	0.07	0.02	0.14
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	1.47	0.06	4.66	0.84	0.11	2.09	0.74	0.19	1.64
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0.07	0	0.19	0.24	0	0.64	0.14	0	0.4
Jun-20	0	0	0	0.06	0	0.21	0.04	0	0.11
Jul-20	0	0	0	0.06	0	0.17	0.04	0	0.11
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0.21	0	0.46	0.09	0	0.2	0.05	0	0.12
Oct-20	0.27	0.12	0.48	0.21	0.06	0.38	0.16	0.05	0.28
Nov-20	0.28	0.14	0.41	0.21	0.08	0.35	0.2	0.08	0.35
Dec-20	0.26	0	0.64	0.82	0.08	1.81	0.8	0.1	1.63
Jan-21	0.07	0	0.19	0.03	0	0.09	0.04	0	0.09
Feb-21	0	0	0	0	0	0	0	0	0

A2.8 Great black-backed gull

Table A2.8.1 Great black-backed gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	32	9	63.51%
Apr-19	26	6	45	11	40.26%	41	13	70	15	36.31%	68	21	124	27	38.44%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	7	0	20	6	90.82%	8	0	21	7	89.81%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	28	7	58	14	50.59%
Aug-19	14	0	33	9	66.67%	27	0	58	15	52.61%	0	0	0	0	0.00%
Sep-19	7	0	20	6	87.70%	14	0	32	9	63.96%	20	6	38	9	44.50%
Oct-19	7	0	19	6	88.04%	24	7	43	10	38.55%	91	17	190	48	52.27%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	27	7	54	14	49.20%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	6	90.73%
Jan-20	0	0	0	0	0.00%	20	0	52	14	69.68%	52	7	123	30	57.76%
Feb-20	112	0	330	103	92.56%	120	7	328	98	81.48%	125	7	344	104	83.30%
Mar-20	0	0	0	0	0.00%	7	0	20	7	94.86%	14	0	33	9	62.62%
Apr-20	0	0	0	0	0.00%	73	0	178	49	67.11%	87	0	199	51	58.91%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	98.38%
Oct-20	7	0	24	7	97.50%	27	0	53	14	49.99%	92	25	192	47	50.90%
Nov-20	0	0	0	0	0.00%	7	0	19	6	86.21%	21	7	39	9	44.06%
Dec-20	0	0	0	0	0.00%	88	6	186	46	51.84%	140	41	256	57	40.53%
Jan-21	0	0	0	0	0.00%	21	0	46	12	59.47%	34	7	65	16	46.09%
Feb-21	7	0	19	6	83.20%	7	0	20	6	87.33%	14	0	40	13	89.11%

Table A2.8.2 Great black-backed gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	LCL	UCL	Mean	LCL	UCL	Mean	LCL	UCL
Mar-19	0	0	0	0	0	0	0.04	0	0.08
Apr-19	0.27	0.06	0.47	0.18	0.06	0.31	0.18	0.05	0.33
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0.03	0	0.09	0.02	0	0.06
Jul-19	0	0	0	0	0	0	0.07	0.02	0.15
Aug-19	0.14	0	0.34	0.12	0	0.26	0	0	0
Sep-19	0.07	0	0.2	0.06	0	0.14	0.05	0.02	0.1
Oct-19	0.07	0	0.2	0.11	0.03	0.19	0.24	0.04	0.51
Nov-19	0	0	0	0	0	0	0.07	0.02	0.14
Dec-19	0	0	0	0	0	0	0.02	0	0.05
Jan-20	0	0	0	0.09	0	0.23	0.14	0.02	0.33
Feb-20	1.17	0	3.45	0.54	0.03	1.48	0.33	0.02	0.92
Mar-20	0	0	0	0.03	0	0.09	0.04	0	0.09
Apr-20	0	0	0	0.33	0	0.8	0.23	0	0.53
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0.02	0	0.05
Oct-20	0.07	0	0.25	0.12	0	0.24	0.25	0.07	0.51
Nov-20	0	0	0	0.03	0	0.08	0.05	0.02	0.1
Dec-20	0	0	0	0.39	0.03	0.84	0.37	0.11	0.69
Jan-21	0	0	0	0.09	0	0.21	0.09	0.02	0.17
Feb-21	0.07	0	0.19	0.03	0	0.09	0.04	0	0.11

Table A2.8.3 Great black-backed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	33	9	65.06%
Apr-19	13	0	32	10	74.38%	21	2	44	12	55.58%	22	2	48	13	56.94%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	7	0	20	7	90.22%	14	0	32	9	64.15%	20	6	38	9	44.87%
Oct-19	7	0	19	6	90.22%	11	0	25	7	58.75%	31	8	60	14	42.87%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	31	8	56.75%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	7	0	20	7	99.49%	13	0	32	9	63.28%
Feb-20	7	0	20	6	87.23%	7	0	19	6	82.71%	7	0	20	6	90.72%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.69%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	94.29%
Oct-20	0	0	0	0	0.00%	20	0	45	13	64.90%	34	7	61	14	40.30%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	31	8	58.33%
Dec-20	0	0	0	0	0.00%	7	0	20	6	87.98%	14	0	32	9	58.95%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	93.51%
Feb-21	7	0	19	6	86.28%	7	0	20	7	91.87%	7	0	20	6	89.96%

Table A2.8.4 Great black-backed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0.04	0	0.09
Apr-19	0.13	0	0.33	0.09	0.01	0.2	0.06	0	0.13
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0.07	0	0.2	0.06	0	0.14	0.05	0.02	0.1
Oct-19	0.07	0	0.2	0.05	0	0.11	0.08	0.02	0.16
Nov-19	0	0	0	0	0	0	0.04	0	0.08
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0.03	0	0.09
Feb-20	0.07	0	0.2	0.03	0	0.08	0.02	0	0.05
Mar-20	0	0	0	0	0	0	0.02	0	0.05
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0.02	0	0.05
Oct-20	0	0	0	0.09	0	0.2	0.09	0.02	0.16
Nov-20	0	0	0	0	0	0	0.04	0	0.08
Dec-20	0	0	0	0.03	0	0.09	0.04	0	0.08
Jan-21	0	0	0	0	0	0	0.02	0	0.05
Feb-21	0.07	0	0.19	0.03	0	0.09	0.02	0	0.05

Table A2.8.5 Great black-backed gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	13	0	33	9	68.40%	21	0	49	14	65.07%	47	7	105	27	56.88%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	7	0	20	7	90.12%	8	0	21	7	91.21%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	27	7	56	14	49.21%
Aug-19	13	0	33	9	70.54%	27	6	60	15	53.52%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	14	0	33	9	65.61%	61	0	141	39	62.87%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	15	0	40	13	86.86%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	92.03%
Jan-20	0	0	0	0	0.00%	14	0	32	9	62.57%	36	7	84	22	59.91%
Feb-20	118	0	404	115	97.30%	120	2	327	101	84.38%	121	3	336	101	83.82%
Mar-20	0	0	0	0	0.00%	7	0	20	7	95.77%	7	0	20	7	89.91%
Apr-20	0	0	0	0	0.00%	74	0	176	48	63.96%	83	6	182	47	56.90%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	7	0	23	7	104.27%	7	0	19	6	89.28%	61	0	150	43	70.21%
Nov-20	0	0	0	0	0.00%	7	0	19	6	87.59%	7	0	20	6	88.37%
Dec-20	0	0	0	0	0.00%	80	6	168	43	53.22%	130	40	229	49	37.68%
Jan-21	0	0	0	0	0.00%	20	0	45	12	60.03%	27	7	55	13	47.97%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	6	89.02%

Table A2.8.6 Great black-backed gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0.13	0	0.34	0.09	0	0.22	0.13	0.02	0.28
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0.03	0	0.09	0.02	0	0.06
Jul-19	0	0	0	0	0	0	0.07	0.02	0.15
Aug-19	0.13	0	0.34	0.12	0.03	0.27	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.06	0	0.15	0.16	0	0.38
Nov-19	0	0	0	0	0	0	0.04	0	0.11
Dec-19	0	0	0	0	0	0	0.02	0	0.05
Jan-20	0	0	0	0.06	0	0.14	0.1	0.02	0.23
Feb-20	1.23	0	4.23	0.54	0.01	1.47	0.32	0.01	0.9
Mar-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Apr-20	0	0	0	0.33	0	0.79	0.22	0.02	0.49
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0.07	0	0.24	0.03	0	0.09	0.16	0	0.4
Nov-20	0	0	0	0.03	0	0.08	0.02	0	0.05
Dec-20	0	0	0	0.36	0.03	0.76	0.35	0.11	0.62
Jan-21	0	0	0	0.09	0	0.2	0.07	0.02	0.15
Feb-21	0	0	0	0	0	0	0.02	0	0.05

A2.9 Great skua

Table A2.9.1 Great skua design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	7	0	25	7	103.65%	7	0	21	7	100.50%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.9.2 Great skua design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.03	0	0.11	0.02	0	0.05
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.9.3 Great skua design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	7	0	20	7	99.89%	7	0	21	7	93.24%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.9.4 Great skua design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.9.5 Great skua design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.9.6 Great skua design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.10 Guillemot

Table A2.10.1 Guillemot design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	381	211	546	82	21.52%	1,034	666	1,391	178	17.21%	1,831	1,519	2,169	157	8.57%
Apr-19	332	184	492	78	23.49%	1,351	592	2,579	528	39.08%	2,384	1,064	4,160	828	34.73%
May-19	45	0	101	29	64.44%	62	0	142	39	62.90%	97	25	175	41	42.27%
Jun-19	9	0	26	8	88.89%	18	0	42	12	66.67%	28	8	57	13	46.43%
Jul-19	9	0	21	7	77.78%	45	9	86	20	44.44%	54	17	97	21	38.89%
Aug-19	18	0	42	13	72.22%	18	0	50	16	88.89%	18	0	53	16	88.89%
Sep-19	17	8	29	7	41.18%	18	0	34	9	50.00%	45	16	79	18	40.00%
Oct-19	71	17	124	28	39.44%	207	137	317	50	24.15%	331	175	594	112	33.84%
Nov-19	118	17	245	53	44.92%	340	128	582	103	30.29%	632	414	885	104	16.46%
Dec-19	685	295	1,200	236	34.45%	1,606	1,107	2,154	259	16.13%	2,356	1,758	3,074	322	13.67%
Jan-20	186	82	300	43	23.12%	480	213	824	129	26.88%	981	671	1,304	133	13.56%
Feb-20	6,944	3,219	11,433	2219	31.96%	9,496	4,555	15,738	2,927	30.82%	12,884	8,054	19,256	2,771	21.51%
Mar-20	109	61	161	26	23.85%	184	111	248	37	20.11%	357	217	504	75	21.01%
Apr-20	111	63	172	29	26.13%	382	219	577	83	21.73%	666	444	914	105	15.77%
May-20	26	0	49	13	50.00%	178	82	285	49	27.53%	339	217	476	59	17.40%
Jun-20	9	0	26	9	100.00%	86	34	140	28	32.56%	133	62	213	41	30.83%
Jul-20	43	0	103	29	67.44%	43	0	107	30	69.77%	54	8	122	32	59.26%
Aug-20	17	0	33	9	52.94%	34	9	63	14	41.18%	45	9	97	24	53.33%
Sep-20	26	0	49	13	50.00%	76	25	133	29	38.16%	118	55	192	36	30.51%
Oct-20	13	0	29	8	61.54%	29	8	55	13	44.83%	76	24	136	30	39.47%
Nov-20	92	43	157	30	32.61%	136	72	201	34	25.00%	320	182	487	78	24.38%
Dec-20	191	79	374	83	43.46%	877	542	1,301	203	23.15%	2,568	1,095	4,472	911	35.48%
Jan-21	527	282	804	119	22.58%	1,237	819	1,634	176	14.23%	1,994	1,583	2,389	153	7.67%
Feb-21	172	54	308	48	27.91%	648	224	1,204	227	35.03%	1,142	571	1,869	303	26.53%

Table A2.10.2 Guillemot design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	3.98	2.2	5.7	4.66	3.00	6.28	4.93	4.08	5.83
Apr-19	3.46	1.92	5.15	6.09	2.67	11.64	6.42	2.86	11.19
May-19	0.46	0	1.05	0.28	0	0.63	0.26	0.07	0.47
Jun-19	0.09	0	0.26	0.08	0	0.18	0.07	0.03	0.14
Jul-19	0.09	0	0.22	0.20	0.04	0.38	0.14	0.04	0.26
Aug-19	0.18	0	0.43	0.08	0	0.22	0.05	0	0.14
Sep-19	0.18	0.08	0.3	0.08	0	0.16	0.12	0.04	0.21
Oct-19	0.75	0.17	1.29	0.93	0.62	1.42	0.89	0.47	1.59
Nov-19	1.22	0.17	2.55	1.54	0.57	2.61	1.70	1.12	2.37
Dec-19	7.17	3.08	12.57	7.24	4.99	9.71	6.34	4.73	8.26
Jan-20	1.93	0.84	3.14	2.16	0.96	3.72	2.64	1.80	3.50
Feb-20	72.78	33.73	119.82	42.84	20.54	71.00	34.67	21.67	51.82
Mar-20	1.15	0.63	1.69	0.83	0.50	1.12	0.96	0.58	1.36
Apr-20	1.16	0.66	1.8	1.72	0.99	2.59	1.79	1.18	2.45
May-20	0.26	0	0.5	0.79	0.37	1.29	0.91	0.58	1.28
Jun-20	0.09	0	0.26	0.38	0.14	0.63	0.36	0.16	0.57
Jul-20	0.45	0	1.07	0.20	0	0.47	0.14	0.03	0.33
Aug-20	0.17	0	0.34	0.14	0.04	0.28	0.12	0.03	0.26
Sep-20	0.26	0	0.5	0.34	0.11	0.61	0.32	0.14	0.51
Oct-20	0.12	0	0.3	0.13	0.04	0.25	0.20	0.07	0.36
Nov-20	0.95	0.45	1.65	0.61	0.32	0.91	0.86	0.49	1.30
Dec-20	1.99	0.82	3.91	3.95	2.45	5.87	6.91	2.95	12.03
Jan-21	5.51	2.95	8.41	5.57	3.69	7.36	5.37	4.26	6.42
Feb-21	1.79	0.55	3.22	2.93	1.01	5.43	3.06	1.53	5.02

Table A2.10.3 Guillemot design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	23	7	98.35%	7	0	23	7	98.70%	7	0	20	7	91.36%
Apr-19	0	0	0	0	0.00%	20	0	47	13	60.52%	27	7	53	13	47.47%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	91.08%
Nov-19	14	0	29	8	53.33%	40	13	78	17	40.41%	88	47	129	21	23.80%
Dec-19	7	0	22	7	103.59%	38	0	80	19	49.64%	40	7	81	20	48.97%
Jan-20	27	0	70	19	71.83%	81	19	162	38	46.39%	111	48	191	38	34.37%
Feb-20	316	204	418	56	17.62%	473	307	650	89	18.75%	652	395	887	128	19.66%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	13	0	38	12	90.01%	35	0	75	20	56.84%
May-20	0	0	0	0	0.00%	7	0	20	6	87%	14	0	40	12	88.71%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	94.99%
Jan-21	40	0	110	32	80.51%	138	54	234	47	33.55%	253	120	390	69	27.10%
Feb-21	56	0	132	35	61.60%	71	13	156	38	53.19%	87	21	168	41	46.61%

Table A2.10.4 Guillemot design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.24	0.03	0	0.1	0.02	0	0.05
Apr-19	0	0	0	0.09	0	0.21	0.07	0.02	0.14
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0.02	0	0.05
Nov-19	0.14	0	0.3	0.18	0.06	0.35	0.24	0.13	0.34
Dec-19	0.07	0	0.23	0.17	0	0.36	0.11	0.02	0.22
Jan-20	0.27	0	0.73	0.36	0.09	0.73	0.3	0.13	0.51
Feb-20	3.31	2.13	4.38	2.13	1.38	2.93	1.75	1.06	2.39
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.06	0	0.17	0.09	0	0.2
May-20	0	0	0	0.03	0	0.09	0.04	0	0.11
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0.02	0	0.05
Jan-21	0.41	0	1.14	0.62	0.24	1.05	0.68	0.32	1.05
Feb-21	0.58	0	1.38	0.32	0.06	0.7	0.23	0.06	0.45

Table A2.10.5 Guillemot design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	374	211	523	82	21.83%	1,027	666	1,368	178	17.31%	1,824	1,519	2,149	157	8.59%
Apr-19	332	184	492	78	23.40%	1,331	592	2,532	528	39.67%	2,357	1,057	4,107	828	35.14%
May-19	45	0	101	29	64.37%	62	0	142	39	63.71%	97	25	175	41	42.08%
Jun-19	9	0	26	8	87.78%	18	0	42	12	65.83%	28	8	57	13	47.02%
Jul-19	9	0	21	7	73.15%	45	9	86	20	43.89%	54	17	97	21	39.01%
Aug-19	18	0	42	13	73.15%	18	0	50	16	87.78%	18	0	53	16	87.78%
Sep-19	17	8	29	7	38.73%	18	0	34	9	51.20%	45	16	79	18	40.96%
Oct-19	71	17	124	28	38.94%	207	137	317	50	24.17%	324	175	574	112	34.54%
Nov-19	104	17	216	53	50.64%	300	115	504	101	33.79%	544	367	756	101	18.64%
Dec-19	678	295	1,178	236	34.76%	1,568	1,107	2,074	258	16.46%	2,316	1,751	2,993	321	13.87%
Jan-20	159	82	230	38	24.01%	399	194	662	124	31.02%	870	623	1,113	128	14.68%
Feb-20	6,628	3,015	11,015	2219	33.47%	9,023	4,248	15,088	2,926	32.42%	12,232	7,659	18,369	2,768	22.63%
Mar-20	109	61	161	26	24.16%	184	111	248	37	20.04%	357	217	504	75	21.02%
Apr-20	111	63	172	29	26.10%	369	219	539	82	22.12%	631	444	839	103	16.28%
May-20	26	0	49	13	50.64%	171	82	265	49	28.49%	325	217	436	58	17.83%
Jun-20	9	0	26	9	102.41%	86	34	140	28	32.15%	133	62	213	41	30.69%
Jul-20	43	0	103	29	67.36%	43	0	107	30	70.43%	54	8	122	32	58.52%
Aug-20	17	0	33	9	54.22%	34	9	63	14	42.60%	45	9	97	24	52.67%
Sep-20	26	0	49	13	50.64%	76	25	133	29	38.11%	118	55	192	36	30.13%
Oct-20	13	0	29	8	60.77%	29	8	55	13	45.40%	76	24	136	30	39.85%
Nov-20	92	43	157	30	32.92%	136	72	201	34	25.17%	320	182	487	78	24.28%
Dec-20	191	79	374	83	43.43%	877	542	1,301	203	23.12%	2,561	1,095	4,452	911	35.58%
Jan-21	487	282	694	115	23.52%	1,099	765	1,400	170	15.45%	1,741	1,463	1,999	137	7.87%
Feb-21	116	54	176	33	28.38%	577	211	1,048	224	38.79%	1,055	550	1,701	300	28.45%

Table A2.10.6 Guillemot design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	3.91	2.2	5.46	4.63	3	6.18	4.91	4.08	5.78
Apr-19	3.46	1.92	5.15	6	2.67	11.43	6.35	2.84	11.05
May-19	0.46	0	1.05	0.28	0	0.63	0.26	0.07	0.47
Jun-19	0.09	0	0.26	0.08	0	0.18	0.07	0.03	0.14
Jul-19	0.09	0	0.22	0.2	0.04	0.38	0.14	0.04	0.26
Aug-19	0.18	0	0.43	0.08	0	0.22	0.05	0	0.14
Sep-19	0.18	0.08	0.3	0.08	0	0.16	0.12	0.04	0.21
Oct-19	0.75	0.17	1.29	0.93	0.62	1.42	0.87	0.47	1.54
Nov-19	1.08	0.17	2.25	1.36	0.51	2.26	1.46	0.99	2.03
Dec-19	7.1	3.08	12.34	7.07	4.99	9.35	6.23	4.71	8.04
Jan-20	1.66	0.84	2.41	1.8	0.87	2.99	2.34	1.67	2.99
Feb-20	69.47	31.6	115.44	40.71	19.16	68.07	32.92	20.61	49.43
Mar-20	1.15	0.63	1.69	0.83	0.5	1.12	0.96	0.58	1.36
Apr-20	1.16	0.66	1.8	1.66	0.99	2.42	1.7	1.18	2.25
May-20	0.26	0	0.5	0.76	0.37	1.2	0.87	0.58	1.17
Jun-20	0.09	0	0.26	0.38	0.14	0.63	0.36	0.16	0.57
Jul-20	0.45	0	1.07	0.2	0	0.47	0.14	0.03	0.33
Aug-20	0.17	0	0.34	0.14	0.04	0.28	0.12	0.03	0.26
Sep-20	0.26	0	0.5	0.34	0.11	0.61	0.32	0.14	0.51
Oct-20	0.12	0	0.3	0.13	0.04	0.25	0.2	0.07	0.36
Nov-20	0.95	0.45	1.65	0.61	0.32	0.91	0.86	0.49	1.3
Dec-20	1.99	0.82	3.91	3.95	2.45	5.87	6.89	2.95	11.98
Jan-21	5.1	2.95	7.27	4.95	3.45	6.31	4.69	3.94	5.37
Feb-21	1.21	0.55	1.84	2.61	0.95	4.73	2.83	1.47	4.57

A2.11 Herring gull

Table A2.11.1 Herring gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	19	6	80.12%	7	0	19	6	87.41%	34	14	55	11	30.66%
Apr-19	0	0	0	0	0.00%	7	0	20	7	93.89%	7	0	20	6	89.38%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	68	0	198	60	89.19%	124	0	310	88	70.85%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	89.79%
Aug-19	0	0	0	0	0.00%	8	0	24	7	94.54%	14	0	33	9	65.24%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	2	0	4	2	85.29%	2	0	4	2	86.54%
Nov-19	0	0	0	0	0.00%	7	0	20	7	91.40%	6	0	20	6	95.51%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	7	0	19	6	86.82%	17	0	38	11	60.41%
Feb-20	15	0	35	10	68.41%	28	0	61	15	54.65%	30	0	65	16	54.34%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	7	0	19	6	82.82%	7	0	19	6	91.42%	21	0	47	13	63.70%
May-20	7	0	25	7	102.60%	7	0	20	6	94.09%	7	0	20	6	89.88%
Jun-20	7	0	21	7	93.18%	8	0	21	7	89.21%	8	0	21	7	88.73%
Jul-20	0	0	0	0	0.00%	7	0	20	6	89.66%	7	0	20	7	91.95%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	94.45%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	7	0	19	6	90.12%	8	0	20	6	84.04%
Nov-20	7	0	20	7	88.37%	14	0	39	12	89.09%	14	0	40	13	89.79%
Dec-20	0	0	0	0	0.00%	11	0	26	8	70.65%	20	0	47	12	60%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	6	80.12%	0	0	0	0	0.00%	7	0	20	7	91.41%

Table A2.11.2 Herring gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.19	0.03	0	0.09	0.09	0.04	0.15
Apr-19	0	0	0	0.03	0	0.09	0.02	0	0.05
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0.3	0	0.89	0.33	0	0.83
Jul-19	0	0	0	0	0	0	0.02	0	0.05
Aug-19	0	0	0	0.03	0	0.11	0.04	0	0.09
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.01	0	0.02	0	0	0.01
Nov-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0.03	0	0.09	0.04	0	0.1
Feb-20	0.15	0	0.37	0.12	0	0.27	0.08	0	0.17
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0.07	0	0.19	0.03	0	0.08	0.05	0	0.13
May-20	0.07	0	0.25	0.03	0	0.09	0.02	0	0.05
Jun-20	0.07	0	0.22	0.03	0	0.09	0.02	0	0.06
Jul-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-20	0	0	0	0	0	0	0.02	0	0.05
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Nov-20	0.07	0	0.2	0.06	0	0.17	0.04	0	0.11
Dec-20	0	0	0	0.05	0	0.12	0.05	0	0.12
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0.02	0	0.05

Table A2.11.3 Herring gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	14	0	33	9	63.59%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	92.74%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	2	0	4	2	86.11%	2	0	4	2	90.81%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	7	0	19	6	89.70%	7	0	20	6	87.50%
Feb-20	0	0	0	0	0.00%	13	0	32	9	68.49%	14	0	32	9	62.33%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	7	0	19	6	80.04%	7	0	19	6	88.73%	22	0	51	14	61.37%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	7	0	20	6	96.49%	7	0	21	7	92.93%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	7	0	20	6	89.49%	7	0	20	6	89.38%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	92.99%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.74%

Table A2.11.4 Herring gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0.04	0	0.09
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0.02	0	0.05
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.01	0	0.02	0	0	0.01
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Feb-20	0	0	0	0.06	0	0.14	0.04	0	0.09
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0.07	0	0.19	0.03	0	0.09	0.06	0	0.14
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0.02	0	0.05
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0.02	0	0.05

Table A2.11.5 Herring gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	7	0	19	6	78.85%	7	0	20	6	87.78%	21	7	39	9	43.65%
Apr-19	0	0	0	0	0.00%	7	0	20	7	92.90%	7	0	20	7	89.78%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	65	0	196	60	91.03%	107	0	300	85	79.62%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.05%
Aug-19	0	0	0	0	0.00%	7	0	20	7	96.76%	14	0	33	9	65.06%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	7	0	20	7	89.94%	7	0	20	7	87.44%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	10	0	28	9	87.45%
Feb-20	15	0	37	10	67.34	15	0	34	9	60.62%	15	0	35	10	63.36%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	7	0	23	7	101.09%	7	0	20	7	90.79%	7	0	20	7	89.17%
Jun-20	7	0	21	7	95.28%	7	0	21	6	84.02%	8	0	22	7	88.65%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	100.21%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	1	0	2	1	93.83%
Nov-20	7	0	20	7	89.02%	13	0	38	12	86.75%	13	0	40	13	94%
Dec-20	0	0	0	0	0.00%	11	0	27	7	68.04%	14	0	35	10	69.49%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.11.6 Herring gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.07	0	0.2	0.03	0	0.09	0.05	0.02	0.1
Apr-19	0	0	0	0.03	0	0.09	0.02	0	0.05
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0.29	0	0.88	0.29	0	0.81
Jul-19	0	0	0	0	0	0	0.02	0	0.05
Aug-19	0	0	0	0.03	0	0.09	0.04	0	0.09
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0.03	0	0.09	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0.03	0	0.07
Feb-20	0.15	0	0.39	0.07	0	0.15	0.04	0	0.09
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0.07	0	0.24	0.03	0	0.09	0.02	0	0.05
Jun-20	0.07	0	0.21	0.03	0	0.09	0.02	0	0.06
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0.02	0	0.05
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0.07	0	0.2	0.06	0	0.17	0.03	0	0.11
Dec-20	0	0	0	0.05	0	0.12	0.04	0	0.09
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.12 Kittiwake

Table A2.12.1 Kittiwake design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	307	183	429	62	19.99%	659	513	782	70	10.61%	908	710	1,129	111	12.13%
Apr-19	48	20	75	15	29.53%	217	75	426	90	41.44%	412	187	708	140	33.81%
May-19	79	41	118	20	24.29%	220	79	421	91	41.22%	342	167	546	99	28.95%
Jun-19	52	20	86	17	32.59%	452	130	977	251	55.47%	626	227	1,175	260	41.49%
Jul-19	20	0	42	11	57.07%	27	7	52	12	43.49%	126	33	276	68	53.56%
Aug-19	14	0	39	12	89.08%	33	0	81	23	68.16%	89	27	160	35	38.75%
Sep-19	0	0	0	0	0.00%	40	0	99	28	69.97%	66	13	131	32	47.12%
Oct-19	13	0	28	8	56.10%	66	50	83	9	12.85%	175	70	313	67	37.98%
Nov-19	39	7	76	19	47.48%	107	64	145	21	19.63%	290	152	442	75	25.75%
Dec-19	76	24	146	33	42.46%	182	139	227	23	12.43%	297	235	356	32	10.62%
Jan-20	141	51	270	59	41.97%	536	235	964	202	37.70%	837	403	1,331	238	28.42%
Feb-20	682	105	1,685	438	64.14%	1,030	316	2,169	521	50.54%	1,843	843	3,060	582	31.56%
Mar-20	46	0	102	28	60.27%	105	38	172	34	32.30%	223	127	330	53	23.41%
Apr-20	2	0	4	2	87.37%	11	3	23	6	55.45%	117	47	203	41	34.59%
May-20	6	0	20	6	101.38%	58	12	119	29	48.51%	146	89	216	34	22.90%
Jun-20	26	6	54	14	51.24%	58	24	100	20	32.97%	135	67	201	35	25.80%
Jul-20	45	11	95	22	48.63%	106	58	159	27	25.50%	171	98	244	37	21.68%
Aug-20	14	0	26	7	46.61%	40	6	92	24	60.76%	68	25	122	26	38.46%
Sep-20	21	0	44	12	56.43%	32	11	55	12	36.71%	48	20	72	14	28.06%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	34	7	74	19	55.01%
Nov-20	92	27	180	37	40.18%	162	90	233	37	22.71%	266	174	351	46	17.27%
Dec-20	19	11	29	5	25.99%	752	55	1,963	521	69.33%	1,308	139	3,168	837	63.98%
Jan-21	120	71	182	29	24.12%	294	185	409	58	19.52%	425	345	501	41	9.53%
Feb-21	39	13	69	16	39.14%	178	50	384	96	53.90%	866	230	1,686	374	43.10%

Table A2.12.2 Kittiwake design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	3.21	1.92	4.49	2.97	2.31	3.53	2.44	1.91	3.04
Apr-19	0.5	0.2	0.78	0.98	0.34	1.92	1.11	0.5	1.9
May-19	0.82	0.43	1.23	0.99	0.35	1.9	0.92	0.45	1.47
Jun-19	0.54	0.2	0.9	2.04	0.58	4.4	1.68	0.61	3.16
Jul-19	0.2	0	0.44	0.12	0.03	0.23	0.34	0.09	0.74
Aug-19	0.14	0	0.4	0.15	0	0.36	0.24	0.07	0.43
Sep-19	0	0	0	0.18	0	0.44	0.18	0.03	0.35
Oct-19	0.13	0	0.28	0.29	0.22	0.37	0.47	0.19	0.84
Nov-19	0.41	0.07	0.8	0.48	0.29	0.65	0.78	0.41	1.19
Dec-19	0.8	0.25	1.53	0.82	0.63	1.02	0.8	0.63	0.96
Jan-20	1.47	0.53	2.82	2.42	1.06	4.35	2.25	1.08	3.58
Feb-20	7.14	1.09	17.65	4.65	1.43	9.78	4.96	2.27	8.23
Mar-20	0.47	0	1.06	0.47	0.17	0.77	0.6	0.34	0.89
Apr-20	0.01	0	0.04	0.05	0.01	0.1	0.31	0.13	0.55
May-20	0.06	0	0.2	0.26	0.05	0.53	0.39	0.24	0.58
Jun-20	0.27	0.06	0.56	0.26	0.11	0.45	0.36	0.18	0.54
Jul-20	0.47	0.11	0.99	0.48	0.26	0.72	0.46	0.26	0.66
Aug-20	0.14	0	0.26	0.18	0.03	0.41	0.18	0.07	0.33
Sep-20	0.21	0	0.46	0.14	0.05	0.24	0.13	0.05	0.19
Oct-20	0	0	0	0	0	0	0.09	0.02	0.2
Nov-20	0.96	0.28	1.88	0.73	0.41	1.05	0.71	0.47	0.94
Dec-20	0.2	0.11	0.29	3.39	0.25	8.85	3.52	0.37	8.52
Jan-21	1.26	0.73	1.9	1.32	0.83	1.85	1.14	0.93	1.35
Feb-21	0.4	0.13	0.72	0.8	0.22	1.73	2.33	0.62	4.53

Table A2.12.3 Kittiwake design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	119	75	159	23	18.72%	292	251	339	23	7.73%	443	316	637	86	19.36%
Apr-19	27	7	45	10	36.86%	130	39	236	51	39.29%	174	80	293	57	32.74%
May-19	72	40	102	16	21.48%	193	63	403	94	48.44%	279	130	488	95	33.90%
Jun-19	40	12	70	16	38.81%	128	82	188	29	22.33%	188	114	273	40	21.29%
Jul-19	0	0	0	0	0.00%	8	0	20	6	84.38%	100	13	246	66	66.56%
Aug-19	7	0	20	6	89.48%	20	0	45	12	59.50%	34	13	59	13	36.87%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	20	6	39	10	45.75%	69	7	155	39	55.98%
Nov-19	39	11	76	18	44.90%	105	66	142	21	19.16%	206	112	300	50	23.91%
Dec-19	64	15	130	31	48.16%	137	87	186	26	18.82%	237	162	311	39	16.11%
Jan-20	103	48	184	36	35.02%	401	204	667	124	30.91%	582	348	841	131	22.53%
Feb-20	244	12	653	189	77.38%	442	120	984	249	56.29%	557	212	1,148	272	48.71%
Mar-20	13	0	26	7	49.36%	21	6	37	9	41.67%	60	31	93	18	28.62%
Apr-20	0	0	0	0	0.00%	7	0	19	6	90.40%	62	32	97	17	27.52%
May-20	0	0	0	0	0.00%	14	0	30	8	55.47%	41	14	68	14	34.55%
Jun-20	20	6	38	9	45.58%	46	13	82	17	37.47%	80	37	133	26	31.30%
Jul-20	46	7	96	23	49.45%	98	51	151	26	26.69%	161	92	230	36	22.32%
Aug-20	14	0	25	7	46.65%	26	6	52	13	48.85%	55	20	92	19	34.26%
Sep-20	7	0	19	6	81.11%	13	0	31	8	59.99%	20	0	39	10	45.83%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	34	6	72	18	53.83%
Nov-20	54	13	93	21	37.52%	98	53	139	22	22.04%	163	112	214	28	17.06%
Dec-20	13	0	27	7	55.59%	106	30	200	46	43.59%	217	83	369	77	35.35%
Jan-21	40	17	74	16	37.91%	121	71	176	28	22.58%	176	121	241	31	17.17%
Feb-21	13	0	23	6	42.28%	87	25	175	41	47.29%	747	149	1,556	357	47.77%

Table A2.12.4 Kittiwake design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	1.25	0.78	1.66	1.32	1.13	1.53	1.19	0.85	1.71
Apr-19	0.27	0.06	0.46	0.58	0.17	1.06	0.47	0.21	0.79
May-19	0.75	0.42	1.06	0.87	0.28	1.82	0.75	0.35	1.31
Jun-19	0.41	0.12	0.73	0.57	0.37	0.85	0.5	0.31	0.73
Jul-19	0	0	0	0.03	0	0.09	0.27	0.03	0.66
Aug-19	0.07	0	0.2	0.09	0	0.2	0.09	0.03	0.16
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0.09	0.03	0.17	0.18	0.02	0.41
Nov-19	0.4	0.11	0.79	0.47	0.3	0.64	0.55	0.3	0.81
Dec-19	0.67	0.16	1.36	0.62	0.39	0.84	0.64	0.43	0.83
Jan-20	1.07	0.49	1.92	1.81	0.92	3.01	1.56	0.94	2.26
Feb-20	2.56	0.12	6.84	1.99	0.54	4.44	1.5	0.57	3.09
Mar-20	0.13	0	0.26	0.09	0.03	0.17	0.16	0.08	0.25
Apr-20	0	0	0	0.03	0	0.09	0.16	0.09	0.26
May-20	0	0	0	0.06	0	0.13	0.11	0.04	0.18
Jun-20	0.2	0.06	0.39	0.2	0.06	0.37	0.22	0.1	0.36
Jul-20	0.48	0.07	1.01	0.44	0.23	0.68	0.43	0.25	0.62
Aug-20	0.14	0	0.26	0.12	0.03	0.23	0.15	0.05	0.25
Sep-20	0.07	0	0.19	0.06	0	0.14	0.05	0	0.1
Oct-20	0	0	0	0	0	0	0.09	0.02	0.19
Nov-20	0.56	0.13	0.97	0.44	0.24	0.62	0.44	0.3	0.58
Dec-20	0.13	0	0.28	0.48	0.13	0.9	0.58	0.22	0.99
Jan-21	0.42	0.17	0.77	0.54	0.32	0.79	0.47	0.32	0.65
Feb-21	0.13	0	0.23	0.39	0.11	0.79	2.01	0.4	4.19

Table A2.12.5 Kittiwake design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	188	101	258	43	22.49%	366	237	478	61	16.42%	466	322	603	72	15.28%
Apr-19	23	7	40	9	36.30%	81	22	179	42	51.26%	232	80	437	94	40.16%
May-19	7	0	23	7	95.94%	27	6	48	12	44.42%	69	13	138	32	46.05%
Jun-19	13	0	39	13	101.38%	320	14	870	265	82.78%	449	51	1,008	255	56.70%
Jul-19	20	0	45	12	56.02%	20	0	47	12	59.75%	28	7	54	13	45.78%
Aug-19	7	0	20	7	94.33%	14	0	39	12	87.79%	55	13	106	26	46.29%
Sep-19	0	0	0	0	0.00%	41	0	104	30	72.63%	67	13	138	33	48.52%
Oct-19	13	0	29	8	56.78%	47	33	60	7	14.34%	109	56	179	33	29.78%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	82	14	163	39	47.89%
Dec-19	13	0	26	7	54.75%	46	19	70	13	28.30%	61	41	81	10	16.31%
Jan-20	38	0	98	28	73.48%	122	19	301	82	66.64%	263	52	533	126	47.79%
Feb-20	431	77	979	261	60.45%	586	153	1,204	280	47.72%	1,263	564	2,093	389	30.79%
Mar-20	33	0	82	24	73.03%	86	32	137	27	30.68%	161	92	234	38	23.06%
Apr-20	2	0	4	2	87.29%	4	0	9	2	51.06%	55	7	115	27	48.81%
May-20	7	0	21	7	100.45%	47	0	112	30	64%	106	52	162	29	27.24%
Jun-20	7	0	19	6	80.07%	13	0	31	8	59.45%	55	18	107	24	42.37%
Jul-20	0	0	0	0	0.00%	7	0	20	6	86.20%	7	0	20	7	95.28%
Aug-20	0	0	0	0	0.00%	13	0	39	12	93.63%	14	0	41	13	94.26%
Sep-20	13	0	39	12	95.14%	20	0	45	12	62.39%	27	7	53	13	47.37%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	39	7	85	23	58.05%	65	28	108	22	32.89%	101	57	152	25	24.71%
Dec-20	7	1	17	5	73.97%	621	20	1,653	490	78.82%	1,152	52	2,905	821	71.28%
Jan-21	79	25	142	31	39.58%	170	83	252	46	26.57%	248	157	336	47	18.79%
Feb-21	26	0	52	14	53.21%	93	19	204	52	55.89%	148	40	272	61	41.00%

Table A2.12.6 Kittiwake design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	1.96	1.05	2.7	1.65	1.07	2.15	1.25	0.87	1.62
Apr-19	0.23	0.07	0.41	0.36	0.1	0.8	0.62	0.22	1.17
May-19	0.07	0	0.24	0.12	0.03	0.22	0.18	0.03	0.37
Jun-19	0.13	0	0.41	1.44	0.06	3.92	1.21	0.14	2.71
Jul-19	0.21	0	0.46	0.09	0	0.21	0.07	0.02	0.14
Aug-19	0.07	0	0.2	0.06	0	0.17	0.15	0.03	0.28
Sep-19	0	0	0	0.18	0	0.47	0.18	0.03	0.37
Oct-19	0.13	0	0.3	0.21	0.15	0.27	0.29	0.15	0.48
Nov-19	0	0	0	0	0	0	0.22	0.04	0.44
Dec-19	0.13	0	0.27	0.2	0.09	0.32	0.16	0.11	0.22
Jan-20	0.4	0	1.03	0.55	0.08	1.36	0.71	0.14	1.43
Feb-20	4.52	0.81	10.26	2.64	0.69	5.43	3.4	1.52	5.63
Mar-20	0.34	0	0.86	0.39	0.14	0.61	0.43	0.25	0.63
Apr-20	0.01	0	0.04	0.02	0	0.04	0.15	0.02	0.31
May-20	0.07	0	0.22	0.21	0	0.5	0.28	0.14	0.44
Jun-20	0.07	0	0.19	0.06	0	0.14	0.15	0.05	0.29
Jul-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Aug-20	0	0	0	0.06	0	0.17	0.04	0	0.11
Sep-20	0.13	0	0.4	0.09	0	0.2	0.07	0.02	0.14
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0.4	0.07	0.88	0.29	0.12	0.48	0.27	0.15	0.41
Dec-20	0.07	0	0.17	2.8	0.09	7.46	3.1	0.14	7.82
Jan-21	0.82	0.26	1.48	0.77	0.37	1.13	0.67	0.42	0.9
Feb-21	0.26	0	0.54	0.42	0.08	0.92	0.4	0.11	0.73

A2.13 Lesser black-backed gull

Table A2.13.1 Lesser black-backed gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	7	0	23	7	98.82%	34	0	94	27	77.39%
Apr-19	90	11	242	62	68.09%	163	55	315	68	41.70%	377	181	611	116	30.66%
May-19	0	0	0	0	0.00%	13	0	32	9	63.17%	48	7	100	24	50.66%
Jun-19	68	12	161	42	61.02%	645	46	1,762	527	81.64%	1,146	90	3,122	904	78.86%
Jul-19	7	0	23	7	102.67%	21	6	40	10	48.52%	82	13	164	39	47.33%
Aug-19	0	0	0	0	0.00%	100	18	223	54	53.98%	221	39	434	103	46.40%
Sep-19	14	0	51	15	106.42%	149	0	366	99	66.66%	147	0	346	95	64.87%
Oct-19	0	0	0	0	0.00%	2	0	4	2	89.28%	2	0	4	2	87.79%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	35	0	100	32	90.14%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	66	0	174	50	76.23%
Feb-20	35	0	90	24	66.78%	91	19	213	52	56.50%	91	19	206	52	56.91%
Mar-20	0	0	0	0	0.00%	13	0	32	9	63.35%	21	0	41	10	49.32%
Apr-20	61	0	169	49	79.83%	776	57	1,983	559	72.08%	793	61	2,060	594	74.83%
May-20	7	0	24	7	100.22%	104	20	211	50	47.92%	118	33	229	51	42.95%
Jun-20	69	13	134	33	47.82%	140	66	224	41	29.38%	199	107	299	49	24.56%
Jul-20	7	0	17	5	73.69%	33	7	60	13	39.72%	61	32	93	16	26.08%
Aug-20	0	0	0	0	0.00%	7	0	20	7	96.98%	21	0	45	11	50.72%
Sep-20	0	0	0	0	0.00%	7	0	20	7	98.95%	28	7	53	13	4.58%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	8	0	22	7	93.22%
Nov-20	0	0	0	0	0.00%	7	0	19	6	89.63%	7	0	21	7	91.40%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	7	0	19	6	82.97%	21	0	41	11	50.30%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	13	0	39	12	91.62%

Table A2.13.2 Lesser black-backed gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0.03	0	0.10	0.09	0	0.25
Apr-19	0.94	0.11	2.53	0.73	0.25	1.42	1.01	0.48	1.64
May-19	0	0	0	0.06	0	0.14	0.13	0.02	0.27
Jun-19	0.71	0.12	1.68	2.91	0.20	7.95	3.08	0.24	8.40
Jul-19	0.07	0	0.23	0.09	0.03	0.18	0.22	0.03	0.44
Aug-19	0	0	0	0.45	0.08	1.00	0.59	0.10	1.17
Sep-19	0.14	0	0.53	0.67	0	1.65	0.39	0	0.93
Oct-19	0	0	0	0.01	0	0.02	0	0	0.01
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0.09	0	0.27
Jan-20	0	0	0	0	0	0	0.18	0	0.47
Feb-20	0.37	0	0.94	0.41	0.09	0.96	0.24	0.05	0.55
Mar-20	0	0	0	0.06	0	0.14	0.05	0	0.11
Apr-20	0.64	0	1.76	3.50	0.26	8.94	2.13	0.16	5.54
May-20	0.07	0	0.24	0.47	0.09	0.95	0.32	0.09	0.61
Jun-20	0.72	0.13	1.40	0.63	0.30	1.01	0.53	0.29	0.80
Jul-20	0.07	0	0.17	0.15	0.03	0.27	0.16	0.08	0.25
Aug-20	0	0	0	0.03	0	0.09	0.06	0	0.12
Sep-20	0	0	0	0.03	0	0.09	0.07	0.02	0.14
Oct-20	0	0	0	0	0	0	0.02	0	0.06
Nov-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0.03	0	0.09	0.05	0	0.11
Feb-21	0	0	0	0	0	0	0.03	0	0.10

Table A2.13.3 Lesser black-backed gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	7	0	20	7	98.61%	34	0	94	27	78.49%
Apr-19	26	6	58	15	55.45%	45	19	75	15	31.96%	127	55	230	49	38.02%
May-19	0	0	0	0	0.00%	14	0	31	9	61.79%	46	7	99	24	51.83%
Jun-19	40	12	77	17	42.59%	132	33	250	58	43.77%	187	58	342	74	39.66%
Jul-19	7	0	22	7	97.43%	7	0	20	6	84.37%	21	0	51	14	65.08%
Aug-19	0	0	0	0	0.00%	27	7	50	12	42.30%	35	7	64	15	42.64%
Sep-19	14	0	49	15	104.75%	26	0	78	25	93.22%	26	0	79	25	93.73%
Oct-19	0	0	0	0	0.00%	2	0	4	2	88.25%	2	0	4	2	92.30%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	89.04%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	27	0	63	16	61.06%	66	7	162	42	63.73%	67	7	163	43	64.33%
Mar-20	0	0	0	0	0.00%	7	0	20	7	102.14%	14	0	33	10	68.52%
Apr-20	0	0	0	0	0.00%	39	0	115	35	88.62%	42	0	122	39	92.62%
May-20	7	0	23	7	107.57%	97	13	202	51	52.38%	116	20	229	54	46.57%
Jun-20	20	0	50	15	74.05%	65	29	104	20	30.14%	95	49	144	24	24.68%
Jul-20	7	0	16	5	76.68%	27	7	46	10	37.57%	48	26	66	10	20.81%
Aug-20	0	0	0	0	0.00%	7	0	19	6	92.60%	21	7	40	10	48.82%
Sep-20	0	0	0	0	0.00%	7	0	20	7	93.58%	7	0	20	7	90.10%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	21	7	98.26%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	13	0	39	12	91.37%

Table A2.13.4 Lesser black-backed gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0.03	0	0.09	0.09	0	0.25
Apr-19	0.27	0.05	0.61	0.20	0.08	0.34	0.34	0.15	0.62
May-19	0	0	0	0.06	0	0.14	0.12	0.02	0.27
Jun-19	0.41	0.12	0.81	0.59	0.15	1.12	0.50	0.16	0.92
Jul-19	0.07	0	0.23	0.03	0	0.09	0.05	0	0.14
Aug-19	0	0	0	0.12	0.03	0.23	0.09	0.02	0.17
Sep-19	0.14	0	0.50	0.12	0	0.35	0.07	0	0.21
Oct-19	0	0	0	0.01	0	0.02	0	0	0.01
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0.02	0	0.05
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0.27	0	0.66	0.29	0.03	0.73	0.18	0.02	0.44
Mar-20	0	0	0	0.03	0	0.09	0.04	0	0.09
Apr-20	0	0	0	0.18	0	0.52	0.11	0	0.33
May-20	0.07	0	0.23	0.43	0.05	0.91	0.31	0.05	0.61
Jun-20	0.20	0	0.51	0.29	0.13	0.47	0.25	0.13	0.39
Jul-20	0.07	0	0.17	0.12	0.03	0.21	0.13	0.07	0.18
Aug-20	0	0	0	0.03	0	0.09	0.05	0.02	0.11
Sep-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0.02	0	0.05
Feb-21	0	0	0	0	0	0	0.03	0	0.10

Table A2.13.5 Lesser black-backed gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	65	0	225	63	97.23%	119	18	263	64	53.70%	244	85	438	95	38.78%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	26	0	98	28	106.35%	510	0	1,503	464	91.05%	973	7	2,808	838	86.12%
Jul-19	0	0	0	0	0.00%	7	0	20	6	90.10%	63	7	130	33	51.76%
Aug-19	0	0	0	0	0.00%	73	12	167	45	61.78%	192	26	395	96	49.55%
Sep-19	0	0	0	0	0.00%	122	6	328	96	78.49%	117	7	321	90	76.85%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	29	0	81	26	92.34%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	65	0	172	49	75.32%
Feb-20	10	0	29	9	95.77%	22	0	50	14	60.48%	25	0	57	15	59.79%
Mar-20	0	0	0	0	0.00%	7	0	19	6	85.84%	7	0	20	7	87.43%
Apr-20	59	0	169	49	82.49%	715	48	1,884	527	73.69%	766	63	1,947	563	73.53%
May-20	0	0	0	0	0.00%	7	0	20	7	100.05%	7	0	20	7	98.96%
Jun-20	53	13	90	20	38.07%	77	33	127	25	31.33%	107	53	167	31	28.40%
Jul-20	0	0	0	0	0.00%	7	0	20	6	89.63%	14	0	33	9	63.21%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	20	0	46	12	61.69%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	8	0	22	7	90.35%
Nov-20	0	0	0	0	0.00%	7	0	20	6	92.01%	7	0	20	7	90.90%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	7	0	19	6	86.78%	14	0	31	8	58.12%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.13.6 Lesser black-backed gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0.67	0	2.35	0.53	0.08	1.18	0.66	0.23	1.18
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0.27	0	1.03	2.30	0	6.78	2.62	0.02	7.55
Jul-19	0	0	0	0.03	0	0.09	0.17	0.02	0.35
Aug-19	0	0	0	0.33	0.05	0.75	0.52	0.07	1.06
Sep-19	0	0	0	0.55	0.03	1.48	0.31	0.02	0.86
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0.08	0	0.22
Jan-20	0	0	0	0	0	0	0.17	0	0.46
Feb-20	0.10	0	0.30	0.10	0	0.22	0.07	0	0.15
Mar-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Apr-20	0.62	0	1.77	3.22	0.21	8.50	2.06	0.17	5.24
May-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Jun-20	0.55	0.13	0.94	0.35	0.15	0.57	0.53	0.29	0.80
Jul-20	0	0	0	0.03	0	0.09	0.29	0.14	0.45
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0.05	0	0.12
Oct-20	0	0	0	0	0	0	0.02	0	0.06
Nov-20	0	0	0	0.03	0	0.09	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0.03	0	0.09	0.04	0	0.08
Feb-21	0	0	0	0	0	0	0	0	0

A2.14 Little gull

Table A2.14.1 Little gull design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	7	0	18	6	80.07%	40	6	89	23	55.62%	70	21	131	28	40.06%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	22	0	51	14	63.54%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	7	0	20	7	88.68%	46	0	107	29	61.34%
Nov-20	7	0	20	6	89.77%	7	0	20	6	90.95%	7	0	21	7	89.55%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	14	0	32	10	71.84%	20	0	44	12	60.36%	34	1	77	19	55.39%

Table A2.14.2 Little gull design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0.07	0	0.19	0.18	0.03	0.4	0.19	0.05	0.35
Nov-19	0	0	0	0	0	0	0.06	0	0.14
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0.03	0	0.09	0.12	0	0.29
Nov-20	0.07	0	0.2	0.03	0	0.09	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0.14	0	0.33	0.09	0	0.2	0.09	0	0.21

Table A2.14.3 Little gull design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	15	0	41	13	87.77%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	7	0	20	7	89.77%	47	7	108	30	62.14%
Nov-20	7	0	20	6	90.88%	7	0	19	6	89.55%	7	0	21	7	89.77%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	13	0	33	10	74.39%	20	0	46	12	60.13%	34	1	78	20	57.96%

Table A2.14.4 Little gull design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0.04	0	0.11
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0.03	0	0.09	0.13	0.02	0.29
Nov-20	0.07	0	0.2	0.03	0	0.09	0.02	0	0.05
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0.13	0	0.34	0.09	0	0.21	0.09	0	0.21

Table A2.14.5 Little gull design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	7	0	18	6	83.47%	39	6	86	22	55.26%	69	20	127	28	40.28%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	89.28%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.14.6 Little gull design based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0.07	0	0.19	0.17	0.03	0.39	0.18	0.05	0.34
Nov-19	0	0	0	0	0	0	0.02	0	0.05
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.15 Puffin

Table A2.15.1 Puffin design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	1	0	2	1	100.00%	1	0	3	1	100.00%	9	1	30	8	88.89%
Apr-19	5	0	12	3	60.00%	5	0	12	3	60.00%	12	0	31	9	75.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.15.2 Puffin design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.01	0	0.02	0	0	0.01	0.02	0	0.08
Apr-19	0.03	0	0.12	0.01	0	0.05	0.03	0	0.08
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.15.3 Puffin design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.15.4 Puffin design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.15.5 Puffin design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	1	0	2	1	116.50%	1	0	3	1	116.50%	9	1	30	8	90.61%
Apr-19	5	0	12	3	69.90%	5	0	12	3	69.90%	12	0	31	9	77.66%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.15.6 Puffin design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0.01	0	0.02	0	0	0.01	0.02	0	0.08
Apr-19	0.03	0	0.12	0.01	0	0.05	0.03	0	0.08
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A2.16 Razorbill

Table A2.16.1 Razorbill design based abundance estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	345	198	506	81	23.48%	572	368	780	110	19.23%	842	579	1,109	134	15.91%
Apr-19	50	22	83	17	34.00%	199	93	357	71	35.68%	372	152	714	150	40.32%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	42	0	97	26	61.90%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	149	45	288	65	43.62%	370	165	571	106	28.65%	538	269	847	148	27.51%
Nov-19	165	43	320	76	46.06%	266	97	480	93	34.96%	542	307	832	122	22.51%
Dec-19	557	285	875	156	28.01%	1,731	1,265	2,345	276	15.94%	2,906	2,202	3,731	391	13.45%
Jan-20	248	48	519	126	50.81%	715	226	1,493	346	48.39%	1,106	541	1,877	339	30.65%
Feb-20	2,031	665	4,022	910	44.81%	2,721	857	5,293	1133	41.64%	3,810	1,898	6,354	1155	30.31%
Mar-20	81	61	98	11	13.58%	194	133	290	42	21.65%	452	313	652	88	19.47%
Apr-20	1	0	1	1	100.00%	1	0	1	1	100.00%	17	0	49	16	94.12%
May-20	9	0	21	6	66.67%	10	0	24	7	70.00%	56	9	119	29	51.79%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	9	0	24	7	77.78%	24	0	75	23	95.83%
Sep-20	9	0	21	6	66.67%	10	0	26	7	70.00%	12	1	29	9	75.00%
Oct-20	48	0	132	28	58.33%	127	7	321	68	53.54%	182	7	432	86	47.25%
Nov-20	235	110	408	79	33.62%	395	231	605	94	23.80%	727	511	1,023	133	18.29%
Dec-20	874	655	1,073	107	12.24%	1,833	1,221	2,663	379	20.68%	4,247	2,796	5,923	828	19.50%
Jan-21	474	200	797	150	31.65%	761	385	1,130	190	24.97%	1,063	621	1,496	218	20.51%
Feb-21	264	108	428	67	25.38%	708	391	1,147	181	25.56%	1,323	658	2,126	361	27.29%

Table A2.16.2 Razorbill design based density estimates of birds in flight and on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	3.61	2.07	5.29	2.58	1.65	3.52	2.26	1.55	2.98
Apr-19	0.53	0.22	0.87	0.89	0.42	1.61	1.00	0.40	1.92
May-19	0	0	0	0	0	0	0.11	0	0.26
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	1.55	0.46	3.02	1.66	0.75	2.58	1.44	0.72	2.27
Nov-19	1.72	0.44	3.35	1.20	0.44	2.16	1.46	0.82	2.24
Dec-19	5.83	2.97	9.17	7.80	5.70	10.57	7.82	5.92	10.03
Jan-20	2.60	0.49	5.44	3.22	1.01	6.74	2.96	1.45	5.04
Feb-20	21.27	6.96	42.15	12.28	3.86	23.88	10.25	5.10	17.10
Mar-20	0.84	0.64	1.01	0.87	0.60	1.31	1.22	0.84	1.75
Apr-20	0	0	0.01	0	0	0	0.05	0	0.13
May-20	0.09	0	0.21	0.04	0	0.11	0.15	0.02	0.32
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0.04	0	0.11	0.06	0	0.20
Sep-20	0.09	0	0.21	0.04	0	0.11	0.04	0	0.07
Oct-20	0.50	0	1.36	0.57	0.04	1.45	0.48	0.02	1.16
Nov-20	2.44	1.15	4.28	1.77	1.04	2.73	1.96	1.37	2.75
Dec-20	9.15	6.87	11.23	8.26	5.50	12.01	11.42	7.52	15.93
Jan-21	4.96	2.09	8.35	3.44	1.74	5.10	2.86	1.67	4.02
Feb-21	2.75	1.12	4.48	3.19	1.76	5.17	3.56	1.77	5.72

Table A2.16.3 Razorbill design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	13	0	40	13	97.18%	14	0	40	13	93.26%
Dec-19	0	0	0	0	0.00%	9	1	22	6	70.02%	9	1	23	7	75.90%
Jan-20	0	0	0	0	0.00%	11	0	28	8	71.09%	13	0	31	9	66.22%
Feb-20	83	42	129	23	27.43%	189	85	321	61	31.86%	236	125	371	62	26.23%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.05%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	26	0	66	19	72.90%	27	0	75	22	81.78%	54	0	130	34	62.61%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	7	0	19	6	88.75%	14	0	29	8	56.74%	27	7	54	13	48.31%
Jan-21	7	0	20	6	82.40%	11	0	25	7	60.81%	18	0	42	11	59.26%
Feb-21	45	13	80	17	37.17%	71	39	108	19	25.58%	89	49	130	21	23.23%

Table A2.16.4 Razorbill design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0.06	0	0.18	0.04	0	0.11
Dec-19	0	0	0	0.04	0	0.1	0.02	0	0.06
Jan-20	0	0	0	0.05	0	0.13	0.03	0	0.08
Feb-20	0.86	0.43	1.35	0.85	0.38	1.45	0.63	0.33	1
Mar-20	0	0	0	0	0	0	0.02	0	0.05
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0.27	0	0.68	0.12	0	0.34	0.14	0	0.35
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0.07	0	0.19	0.06	0	0.13	0.07	0.02	0.14
Jan-21	0.07	0	0.21	0.05	0	0.11	0.05	0	0.11
Feb-21	0.46	0.13	0.84	0.32	0.17	0.49	0.24	0.13	0.35

Table A2.16.5 Razorbill design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	345	198	506	81	23.38%	572	368	780	110	19.23%	842	579	1,109	134	15.97%
Apr-19	50	22	83	17	34.22%	199	93	357	71	35.62%	372	152	714	150	40.41%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	42	0	97	26	61.11%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	149	45	288	65	43.47%	370	165	571	106	28.74%	538	269	847	148	27.49%
Nov-19	165	43	320	76	45.92%	253	97	440	92	36.23%	528	307	792	121	22.92%
Dec-19	557	285	875	156	28.09%	1,722	1,264	2,323	276	16%	2,897	2,201	3,708	391	13.50%
Jan-20	248	48	519	126	50.76%	704	226	1,465	346	49.13%	1,093	541	1,846	339	30.97%
Feb-20	1,948	623	3,893	909	46.68%	2,532	772	4,972	1132	44.70%	3,574	1,773	5,983	1154	32.28%
Mar-20	81	61	98	11	13.58%	194	133	290	42	21.42%	445	313	632	88	19.77%
Apr-20	1	0	1	1	122.22%	1	0	1	1	122.22%	17	0	49	16	93.46%
May-20	9	0	21	6	67.90%	10	0	24	7	73.33%	56	9	119	29	52.38%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	9	0	24	7	81.48%	24	0	75	23	96.76%
Sep-20	9	0	21	6	67.90%	10	0	26	7	73.33%	12	1	29	9	71.29%
Oct-20	22	0	66	21	94.44%	100	7	246	65	64.78%	128	7	302	79	62.06%
Nov-20	235	110	408	79	33.81%	395	231	605	94	23.83%	727	511	1,023	133	18.32%
Dec-20	867	655	1,054	106	12.26%	1,819	1,221	2,634	379	20.83%	4,220	2,789	5,869	827	19.61%
Jan-21	467	200	777	150	32.19%	750	385	1,105	189	25.26%	1,045	621	1,454	218	20.82%
Feb-21	219	95	348	65	29.58%	637	352	1,039	180	28.20%	1,234	609	1,996	361	29.22%

Table A2.16.6 Razorbill design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	3.61	2.07	5.29	2.58	1.65	3.52	2.26	1.55	2.98
Apr-19	0.53	0.22	0.87	0.89	0.42	1.61	1	0.4	1.92
May-19	0	0	0	0	0	0	0.11	0	0.26
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	1.55	0.46	3.02	1.66	0.75	2.58	1.44	0.72	2.27
Nov-19	1.72	0.44	3.35	1.14	0.44	1.98	1.42	0.82	2.13
Dec-19	5.83	2.97	9.17	7.76	5.7	10.47	7.8	5.92	9.97
Jan-20	2.6	0.49	5.44	3.17	1.01	6.61	2.93	1.45	4.96
Feb-20	20.41	6.53	40.8	11.43	3.48	22.43	9.62	4.77	16.1
Mar-20	0.84	0.64	1.01	0.87	0.6	1.31	1.2	0.84	1.7
Apr-20	0	0	0.01	0	0	0	0.05	0	0.13
May-20	0.09	0	0.21	0.04	0	0.11	0.15	0.02	0.32
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0.04	0	0.11	0.06	0	0.2
Sep-20	0.09	0	0.21	0.04	0	0.11	0.04	0	0.07
Oct-20	0.23	0	0.68	0.45	0.04	1.11	0.34	0.02	0.81
Nov-20	2.44	1.15	4.28	1.77	1.04	2.73	1.96	1.37	2.75
Dec-20	9.08	6.87	11.04	8.2	5.5	11.88	11.35	7.5	15.79
Jan-21	4.89	2.09	8.14	3.39	1.74	4.99	2.81	1.67	3.91
Feb-21	2.29	0.99	3.64	2.87	1.59	4.68	3.32	1.64	5.37

A2.17 Red-throated diver

Table A2.17.1 Red-throated diver design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer					Wind Farm + 12km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	6	88.96%	n/a	n/a	n/a	n/a	n/a
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-19	7	0	17	5	74.45%	14	0	32	9	61.37%	14	0	32	9	61.39%	n/a	n/a	n/a	n/a	n/a
Jan-20	0	0	0	0	0.00%	7	0	20	7	94.60%	7	0	20	7	93.73%	n/a	n/a	n/a	n/a	n/a
Feb-20	5	0	11	4	71.44%	22	0	49	13	56.48%	23	0	52	13	58.09%	n/a	n/a	n/a	n/a	n/a
Mar-20	7	0	19	6	88.66%	14	0	30	8	56.78%	41	7	86	21	51.31%	n/a	n/a	n/a	n/a	n/a
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.83%	n/a	n/a	n/a	n/a	n/a
Jan-21	0	0	0	0	0.00%	18	4	35	9	47.55%	27	7	49	11	39.33%	130	60	213	42	31.96%
Feb-21	20	7	29	6	27.77%	62	20	135	31	49.73%	93	39	161	32	34.16%	716	376	1,067	179	24.93%

Table A2.17.2 Red-throated diver design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0.02	0	0.05	n/a	n/a	n/a
Apr-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-19	0.07	0	0.18	0.06	0	0.14	0.04	0	0.09	n/a	n/a	n/a
Jan-20	0	0	0	0.03	0	0.09	0.02	0	0.05	n/a	n/a	n/a
Feb-20	0.05	0	0.11	0.10	0	0.22	0.06	0	0.14	n/a	n/a	n/a
Mar-20	0.07	0	0.20	0.06	0	0.13	0.11	0.02	0.23	n/a	n/a	n/a
Apr-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-20	0	0	0	0	0	0	0.02	0	0.05	n/a	n/a	n/a
Jan-21	0	0	0	0.08	0.02	0.15	0.07	0.02	0.13	0.16	0.07	0.27
Feb-21	0.20	0.07	0.30	0.28	0.09	0.61	0.25	0.10	0.43	0.91	0.47	1.35

Table A2.17.3 Red-throated diver design based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer					Wind Farm + 12km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-19	7	0	17	5	79.22%	7	0	19	6	82.84%	7	0	20	7	90.16%	n/a	n/a	n/a	n/a	n/a
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	26	0	57	14	53.18%

Table A2.17.4 Red-throated diver design based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Apr-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-19	0.06	0	0.18	0.03	0	0.08	0.02	0	0.05	n/a	n/a	n/a
Jan-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Feb-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Mar-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Apr-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jan-21	0	0	0	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0	0.03	0	0.07

Table A2.17.5 Red-throated diver design based abundance estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer					Wind Farm + 12km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	6	90.71%	n/a	n/a	n/a	n/a	n/a
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-19	0	0	0	0	0.00%	7	0	24	7	96.37%	7	0	20	7	93.15%	n/a	n/a	n/a	n/a	n/a
Jan-20	0	0	0	0	0.00%	7	0	20	7	96.39%	7	0	20	7	90.48%	n/a	n/a	n/a	n/a	n/a
Feb-20	5	0	11	4	71.99%	22	0	44	12	52.97%	23	0	53	14	60.00%	n/a	n/a	n/a	n/a	n/a
Mar-20	7	0	19	6	87.57%	14	0	31	8	58.92%	40	7	84	20	49.54%	n/a	n/a	n/a	n/a	n/a
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%	n/a	n/a	n/a	n/a	n/a
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	8	0	21	7	91.73%	n/a	n/a	n/a	n/a	n/a
Jan-21	0	0	0	0	0.00%	18	4	37	9	48.07%	27	7	48	11	38.32%	130	56	218	42	32.03%
Feb-21	20	7	29	6	27.03%	60	20	120	28	46.08%	95	38	166	32	33.49%	678	370	991	163	23.92%

Table A2.17.6 Red-throated diver design based density estimates of birds on the sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer			Wind Farm + 12km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0.02	0	0.05	n/a	n/a	n/a
Apr-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-19	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-19	0	0	0	0.03	0	0.10	0.02	0	0.05	n/a	n/a	n/a
Jan-20	0	0	0	0.03	0	0.09	0.02	0	0.05	n/a	n/a	n/a
Feb-20	0.04	0	0.11	0.10	0	0.19	0.06	0	0.14	n/a	n/a	n/a
Mar-20	0.07	0	0.20	0.06	0	0.14	0.11	0.02	0.22	n/a	n/a	n/a
Apr-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
May-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jun-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Jul-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Aug-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Sep-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Oct-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Nov-20	0	0	0	0	0	0	0	0	0	n/a	n/a	n/a
Dec-20	0	0	0	0	0	0	0.02	0	0.05	n/a	n/a	n/a
Jan-21	0	0	0	0.08	0.02	0.16	0.07	0.02	0.13	0.16	0.07	0.28
Feb-21	0.20	0.07	0.30	0.27	0.09	0.54	0.26	0.10	0.45	0.86	0.47	1.25

A2.18 Sandwich tern

Table A2.18.1 Sandwich tern design based abundance estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	95.69%
May-19	0	0	0	0	0.00%	7	0	20	7	92.30%	21	0	49	14	63.52%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	13	0	32	9	63.03%	14	0	33	9	61.26%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	14	0	39	12	88.26%	14	0	38	12	87.45%	15	0	40	13	85.06%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.18.2 Sandwich tern design based density estimates of birds in flight and on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0.02	0	0.05
May-19	0	0	0	0.03	0	0.09	0.06	0	0.13
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.06	0	0.14	0.04	0	0.09
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0.14	0	0.41	0.06	0	0.17	0.04	0	0.11
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.18.3 Sandwich tern design-based abundance estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-19	0	0	0	0	0.00%	7	0	20	7	92.48%	20	0	51	14	66.34%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	13	0	32	9	66.56%	14	0	34	9	64.21%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	13	0	39	12	91.58%	14	0	38	12	87.37%	14	0	40	13	92.45%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.18.4 Sandwich tern design-based density estimates of birds in flight (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0.03	0	0.09	0.05	0	0.14
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0.06	0	0.14	0.04	0	0.09
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0.14	0	0.41	0.06	0	0.17	0.04	0	0.11
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

Table A2.18.5 Sandwich tern design based abundance estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Abundance / Month	Wind Farm					Wind Farm + 2km buffer					Wind Farm + 4km buffer				
	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV	Mean	LCL	UCL	SD	CV
Mar-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-19	0	0	0	0	0.00%	0	0	0	0	0.00%	7	0	20	7	98.25%
May-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-19	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Mar-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Apr-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
May-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jun-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jul-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Aug-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Sep-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Oct-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Nov-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Dec-20	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Jan-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%
Feb-21	0	0	0	0	0.00%	0	0	0	0	0.00%	0	0	0	0	0.00%

Table A2.18.6 Sandwich tern design-based density estimates of birds on sea (LCL = lower 95% confidence limit, UCL = Upper 95% confidence limit)

Density / Month	Wind Farm			Wind Farm + 2km buffer			Wind Farm + 4km buffer		
	Mean	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**	**Mean**	**LCL**	**UCL**
Mar-19	0	0	0	0	0	0	0	0	0
Apr-19	0	0	0	0	0	0	0.02	0	0.05
May-19	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0

A3 Annex 3 Figures

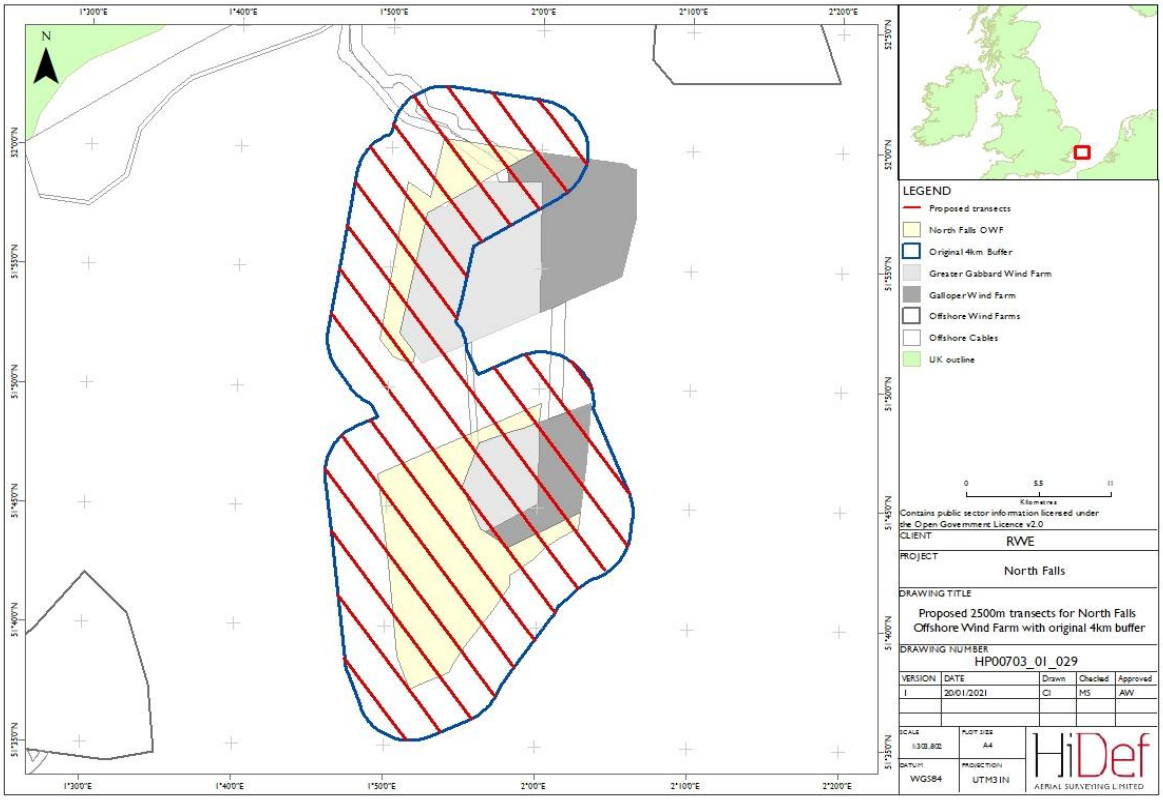

Figure 13.2.1 Survey design showing the NFOW survey area with 4km buffer and 2.5km spaced transects

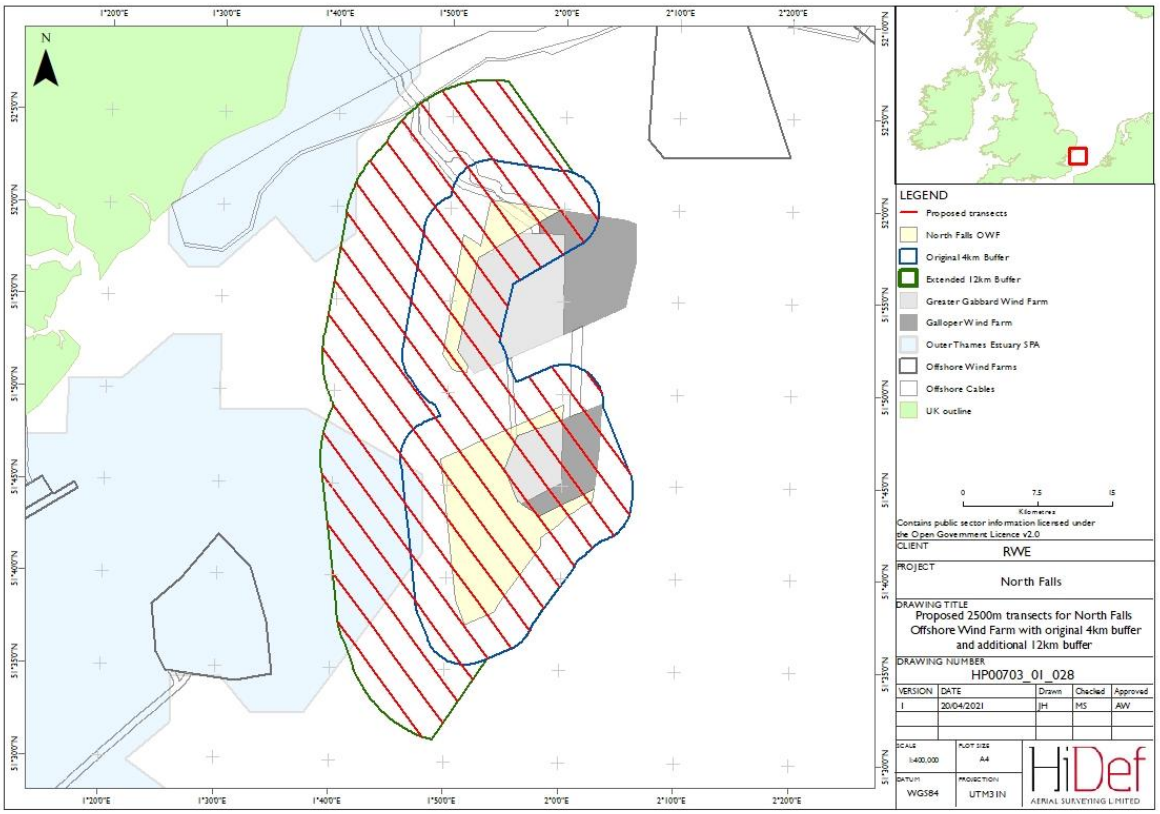

Figure 13.2.2 Extended survey design showing the NFOW survey area with 2.5km spaced transects, 4km buffer and extended 12km buffer zone to the west. The Outer Thames Estuary SPA is also shown.

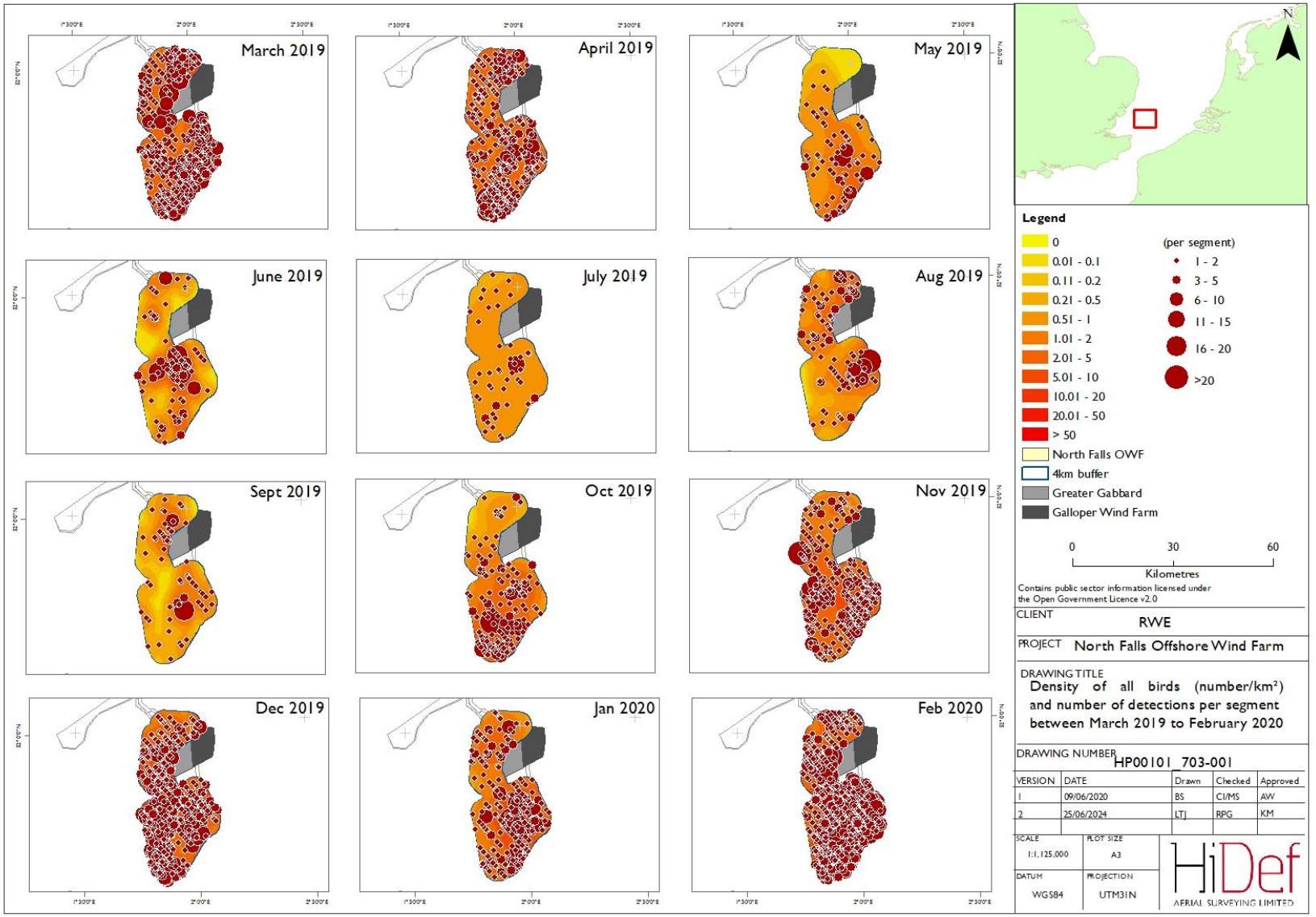

Figure 13.2.3 Density of all birds (number/km²) and number of detections per segment, March 2019 to February 2020

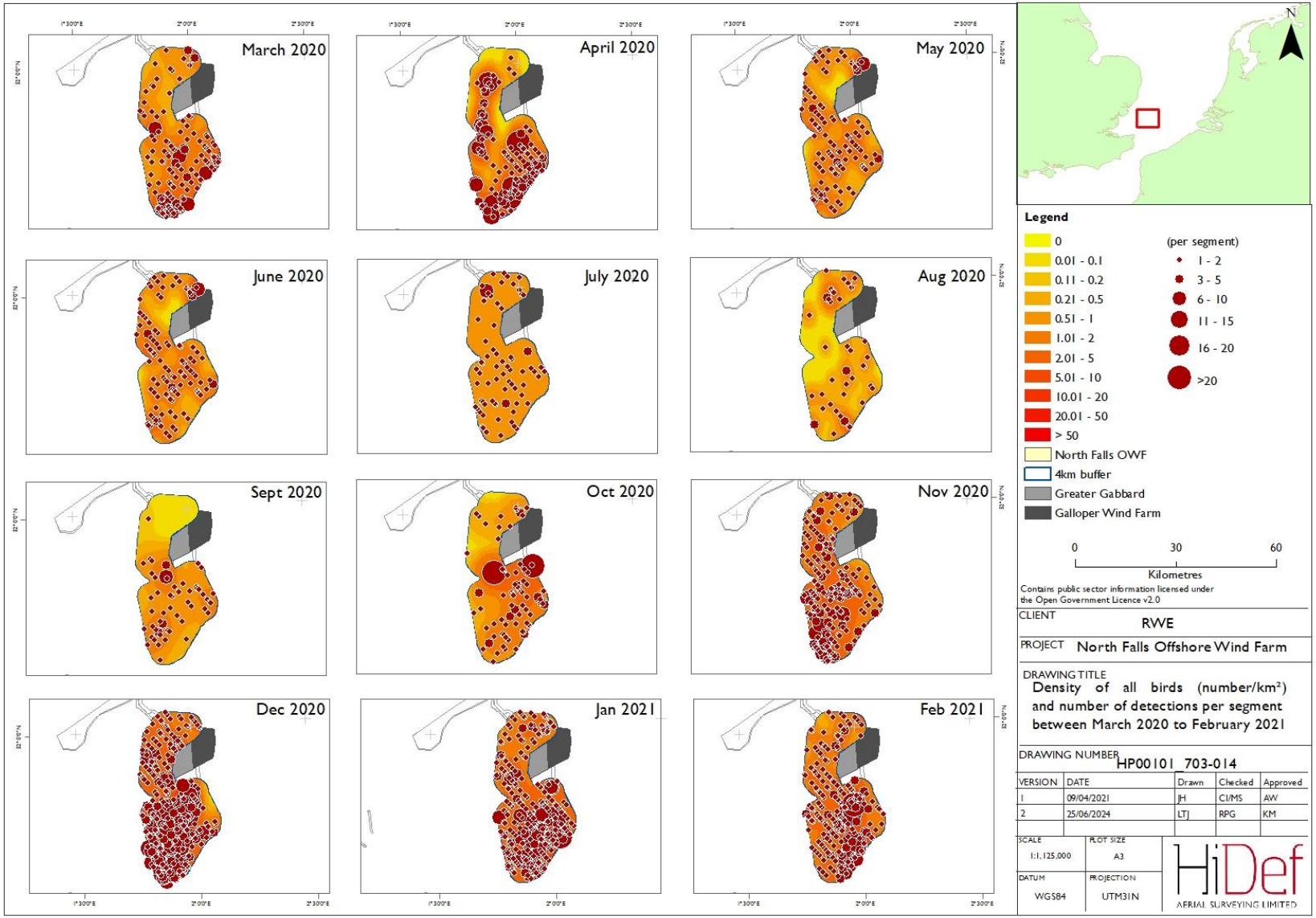

Figure 13.2.4 Density of all birds (number/km²) and number of detections per segment, March 2020 to February 2021

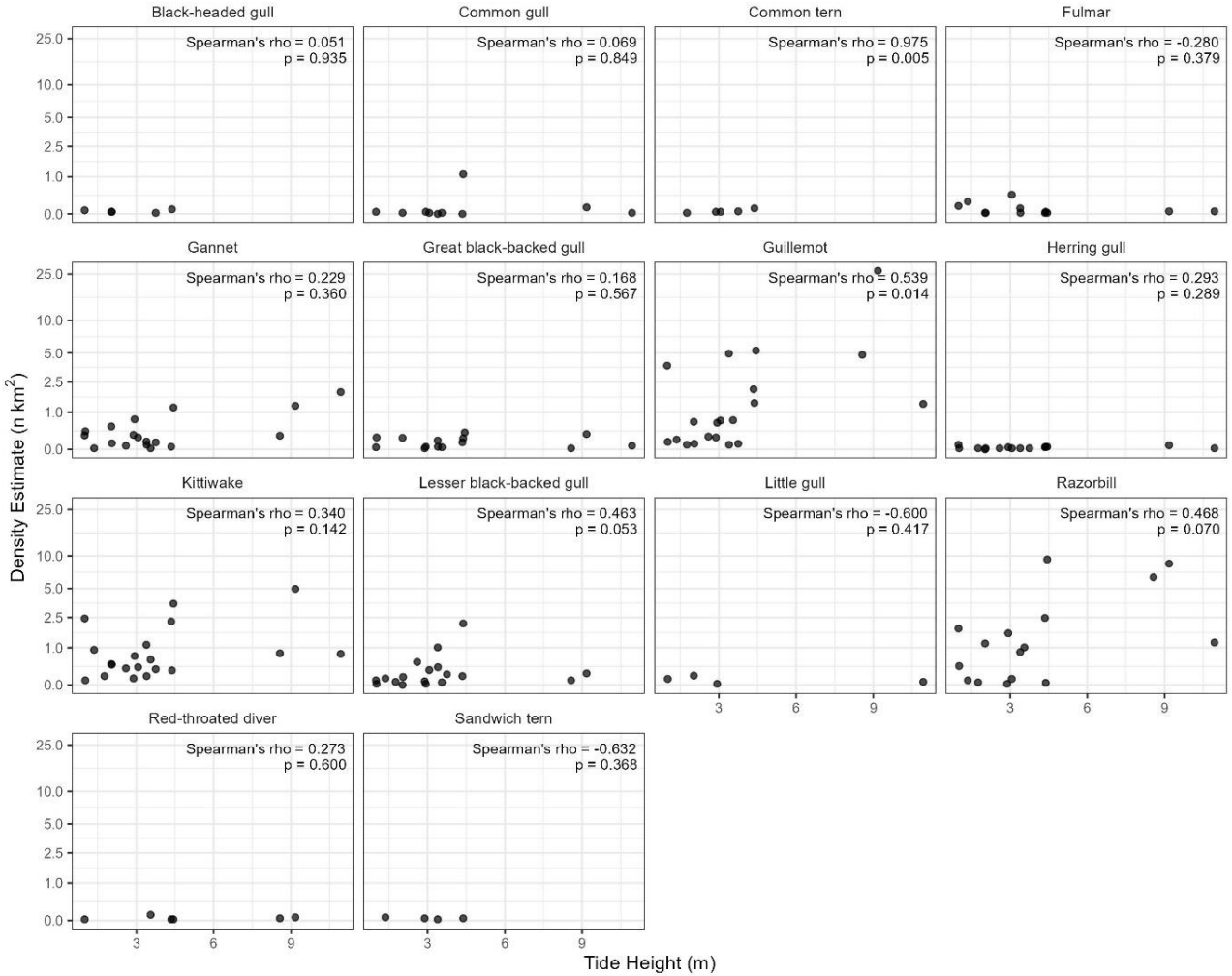

Figure 13.2.5 Tide height against apportioned density estimates (without availability bias corrections)

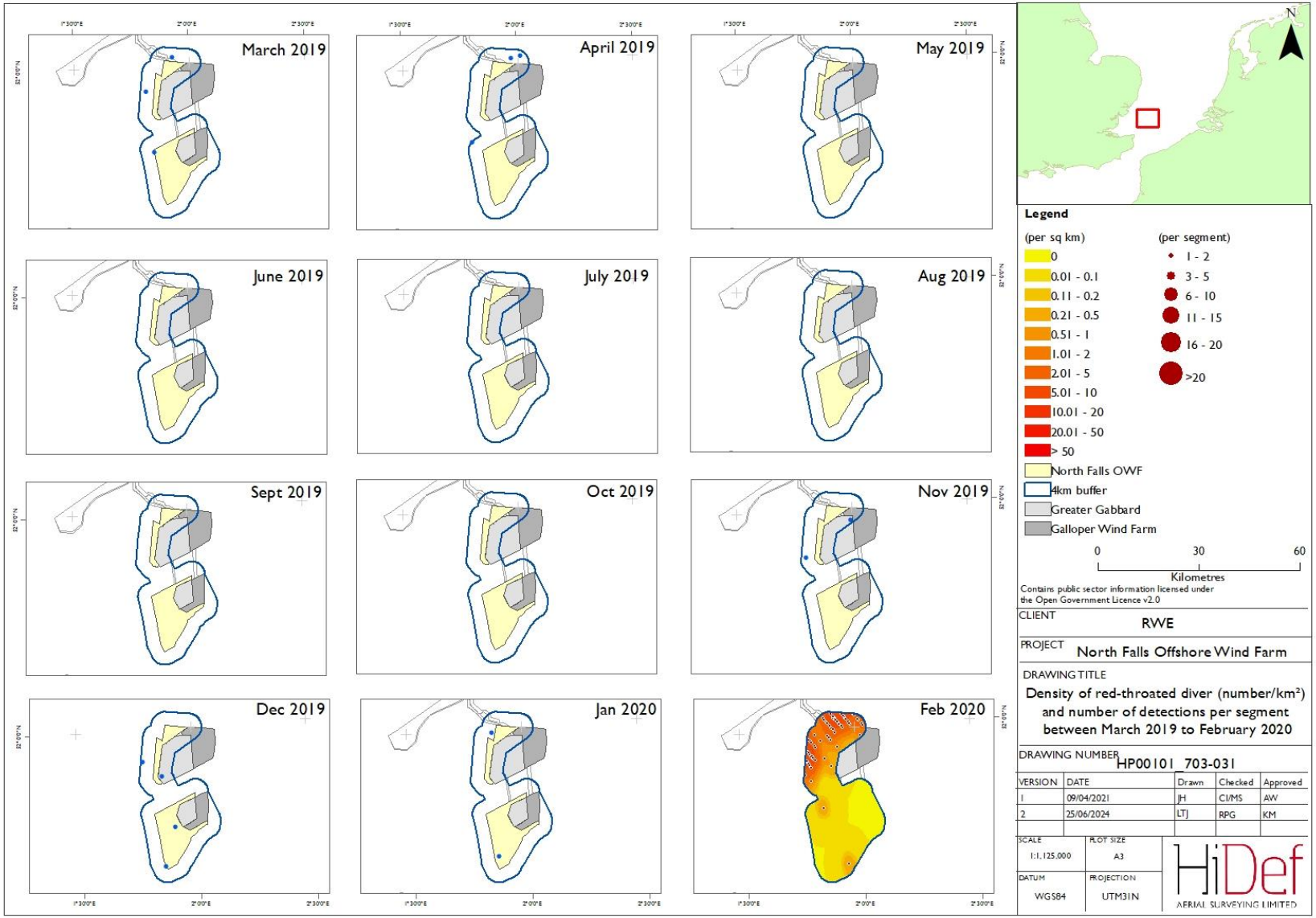

Figure 13.2.6 Density of red-throated divers (number/km²) and number of detections per segment, March 2019 and February 2020

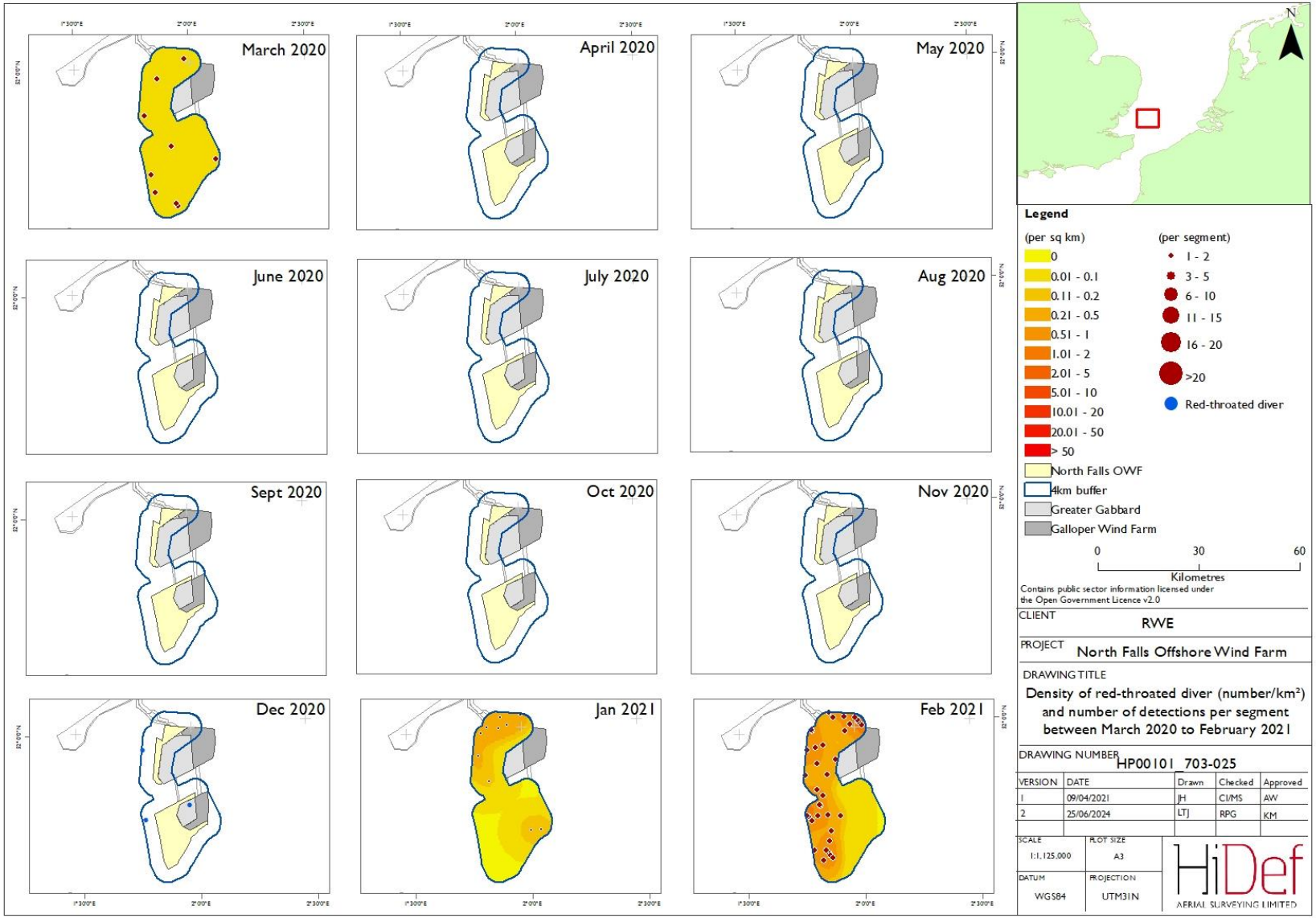

Figure 13.2.7 Density of red-throated divers (number/km²) and number of detections per segment between March 2020 and February 2021

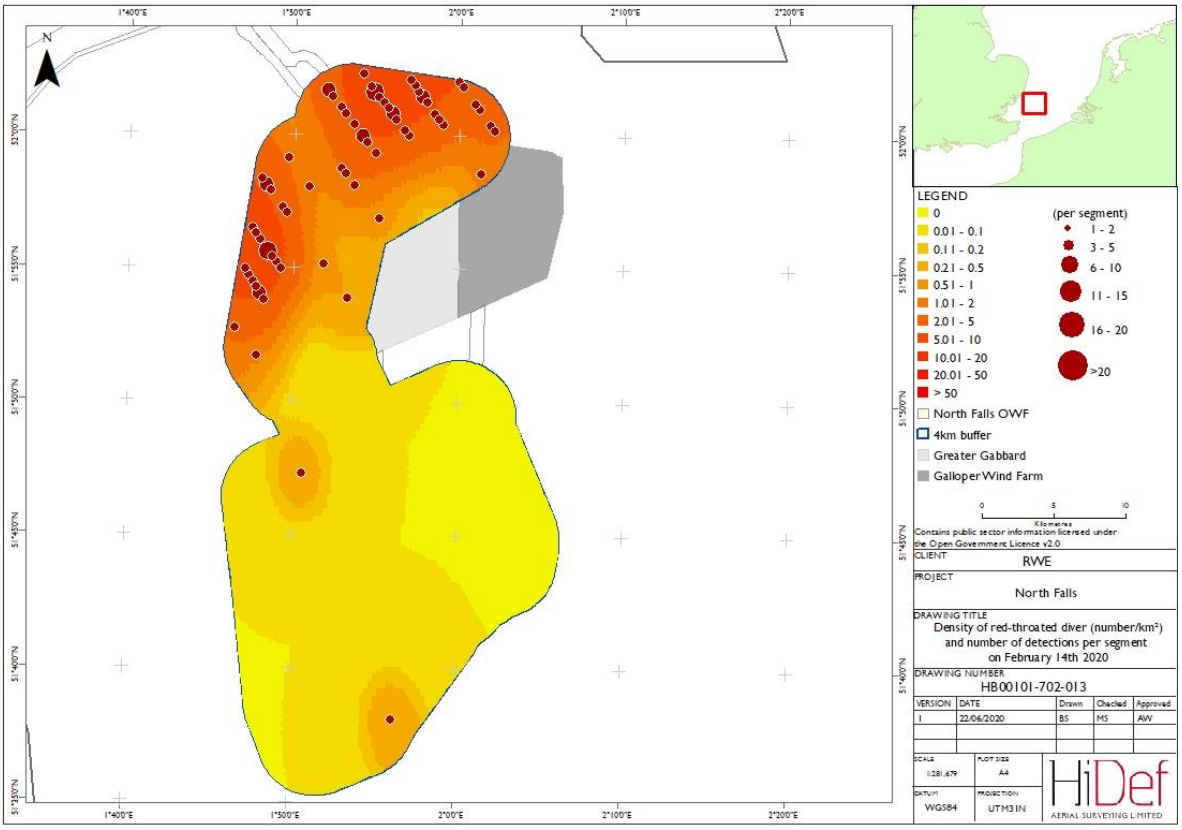

Figure 13.2.8 Density of red-throated divers (number/km²) and number of detections per segment during Survey 12 on 14 February 2020

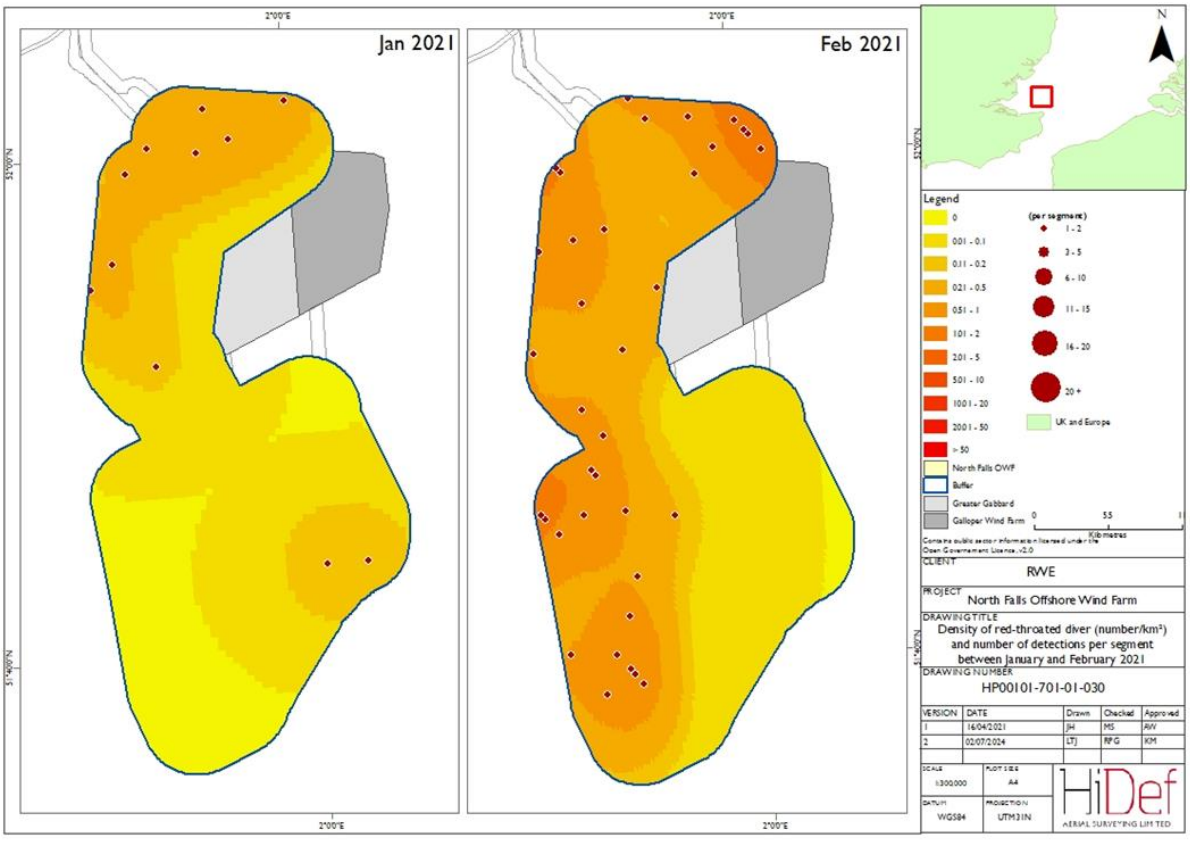

Figure 13.2.9 Density of red-throated divers (number/km²) and number of detections per segment during Survey 23 on 22 January and Survey 24 on 13 February 2021

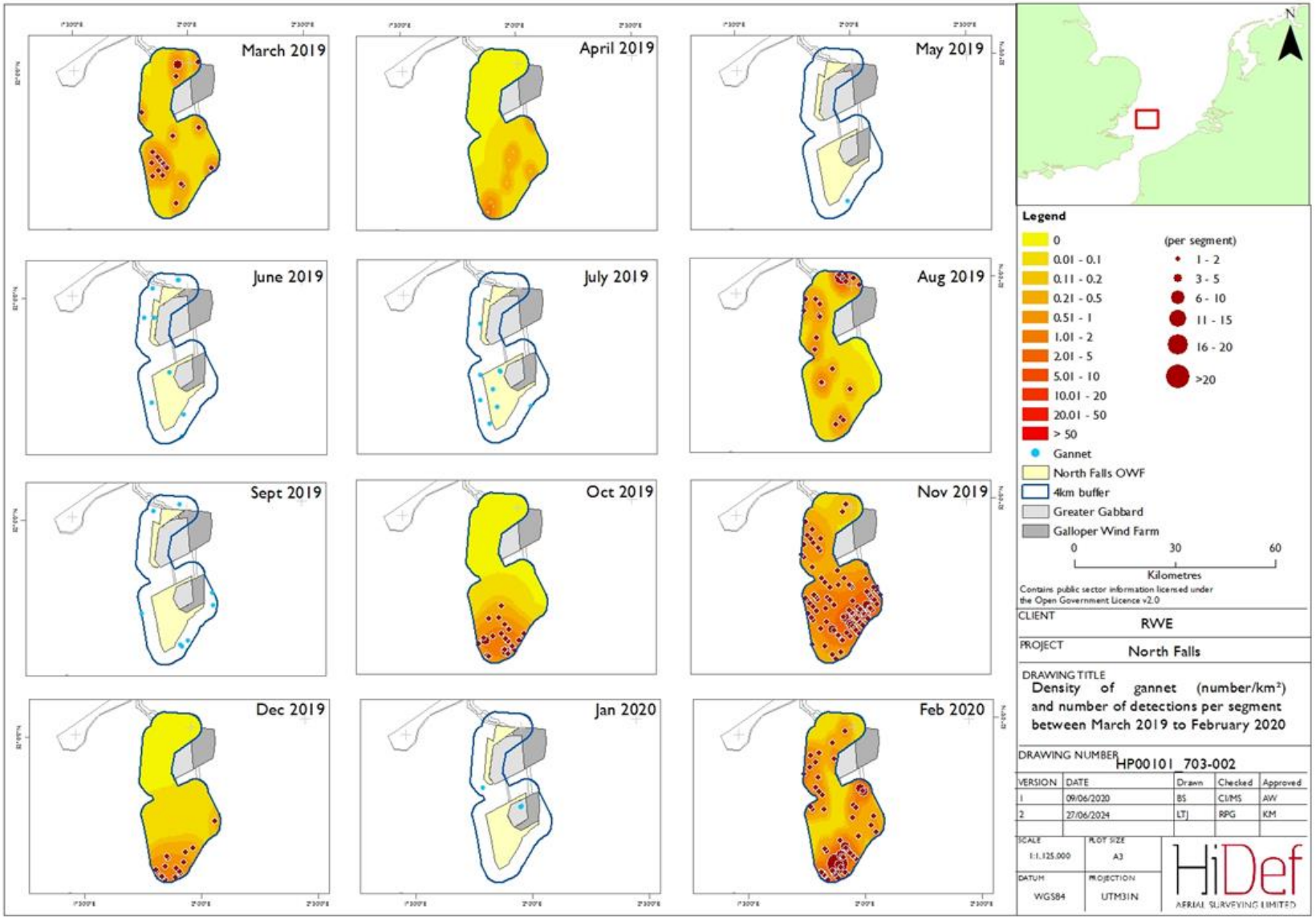

Figure 13.2.10 Density of gannets (number/km²) and number of detections per segment, March 2019 to February 2020

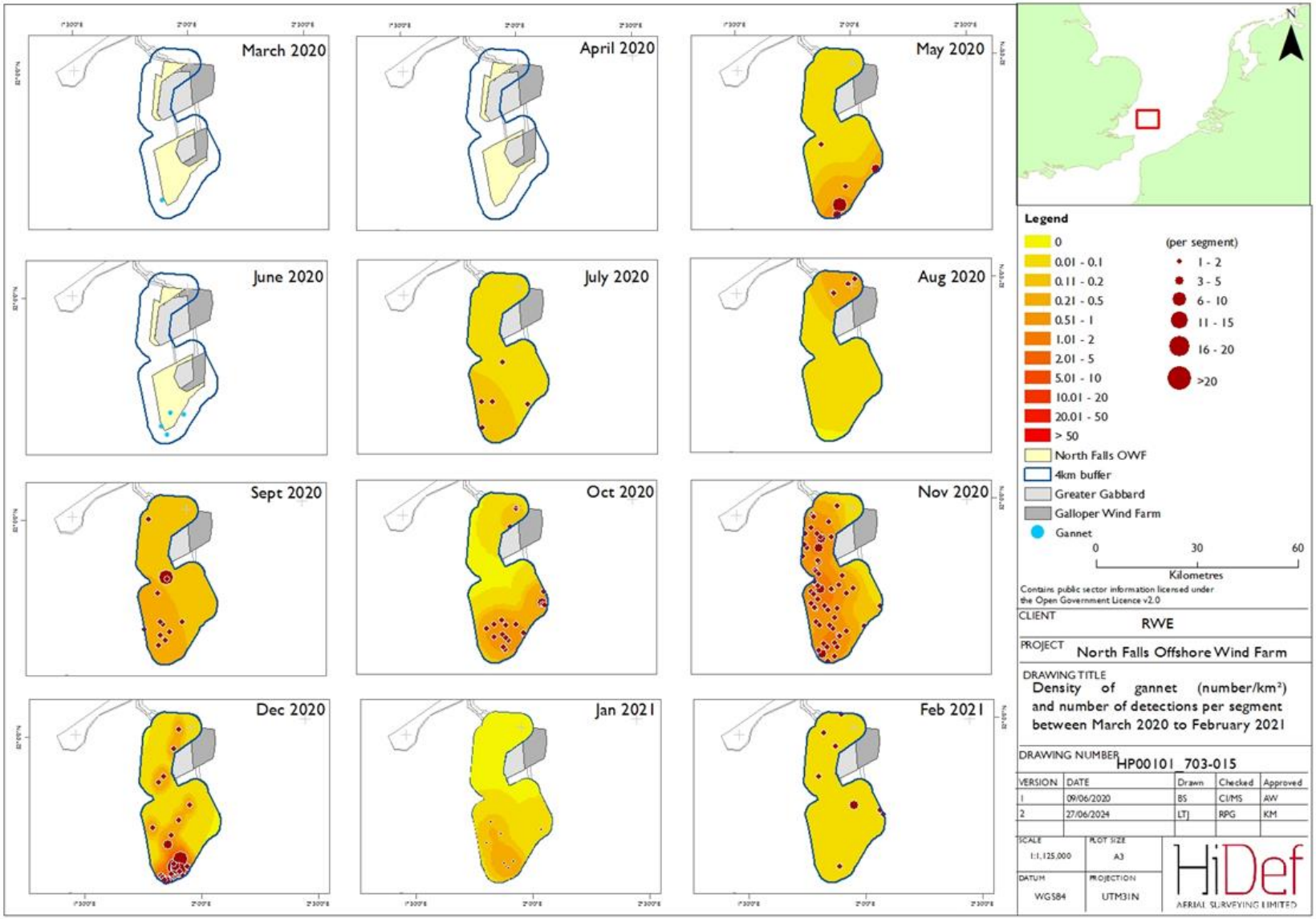

Figure 13.2.11 Density of gannets (number/km²) and number of detections per segment, March 2020 to February 2021

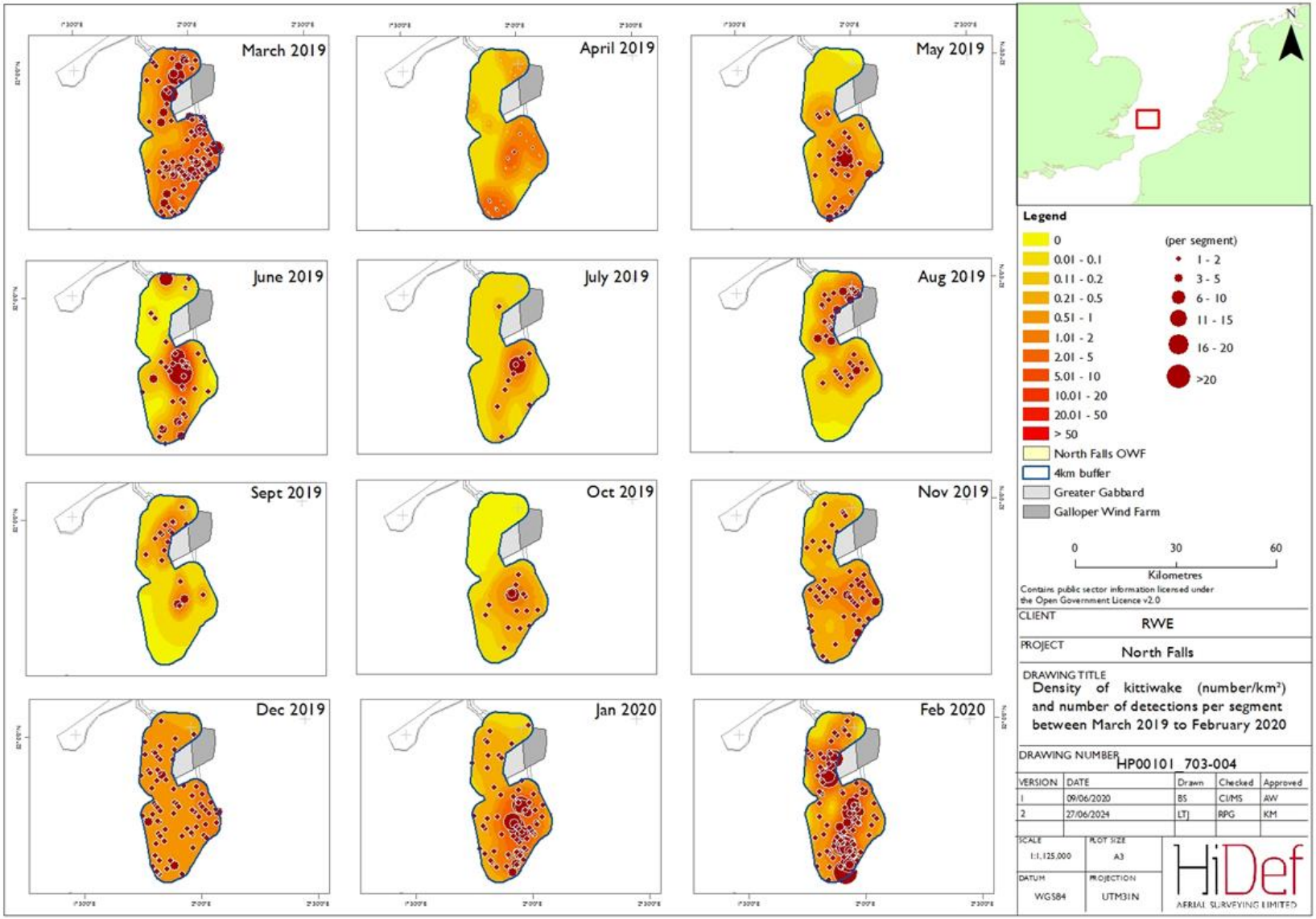

Figure 13.2.12 Density of kittiwakes (number/km²) and number of detections per segment, March 2019 to February 2020

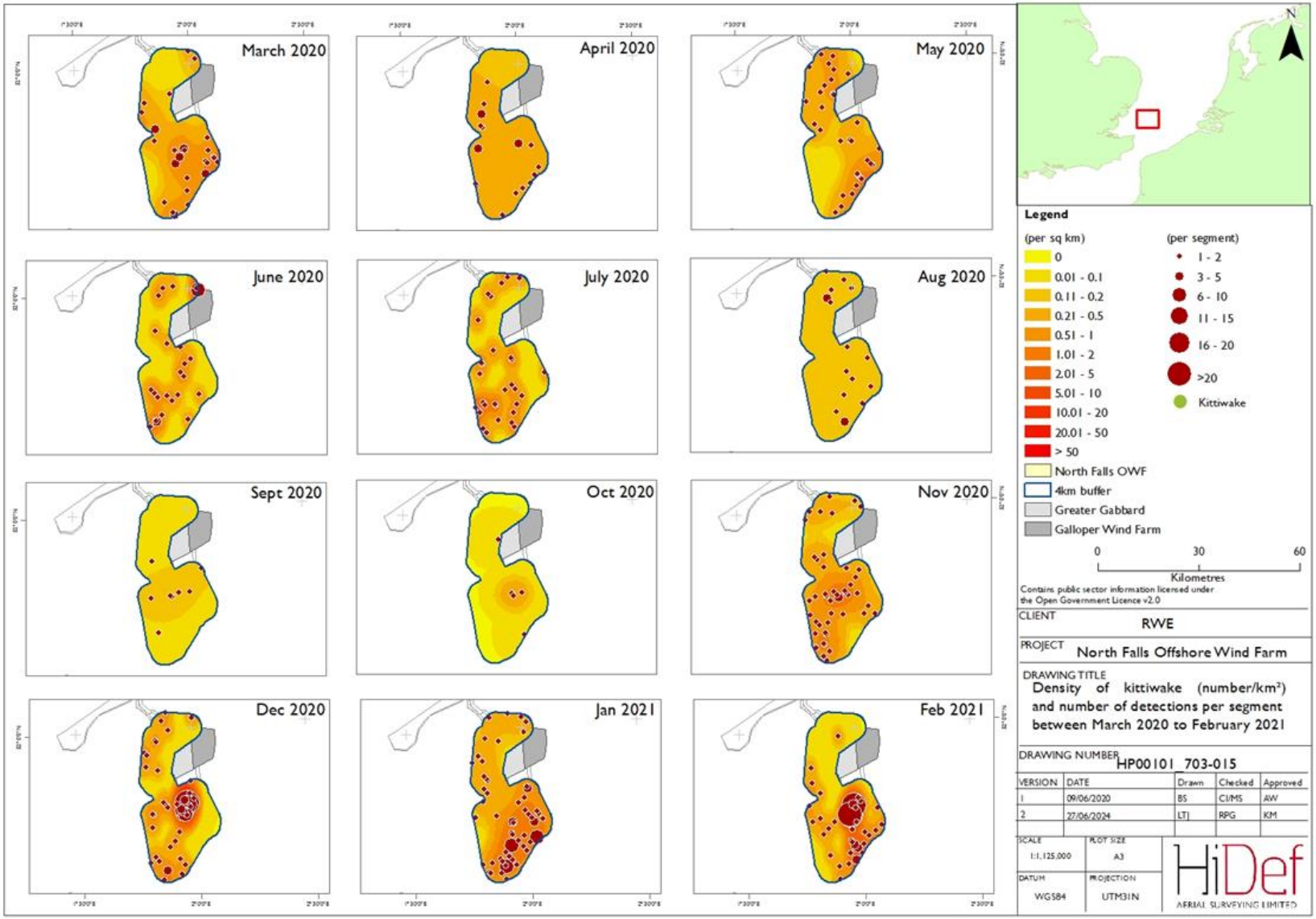

Figure 13.2.13 Density of kittiwakes (number/km²) and number of detections per segment, March 2020 to February 2021

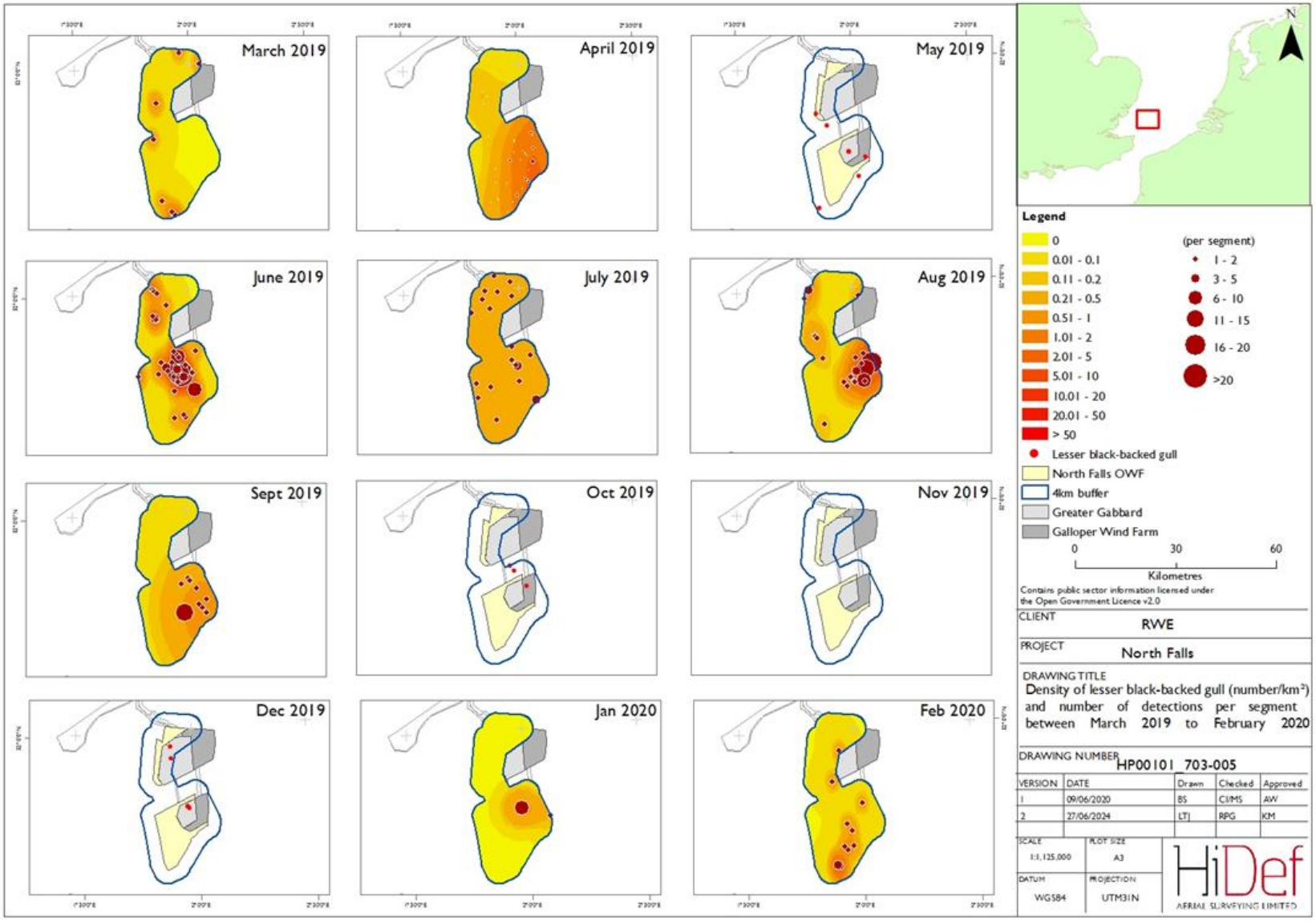

Figure 13.2.14 Density of lesser black-backed gulls (number/km²) and number of detections per segment, March 2019 to February 2020

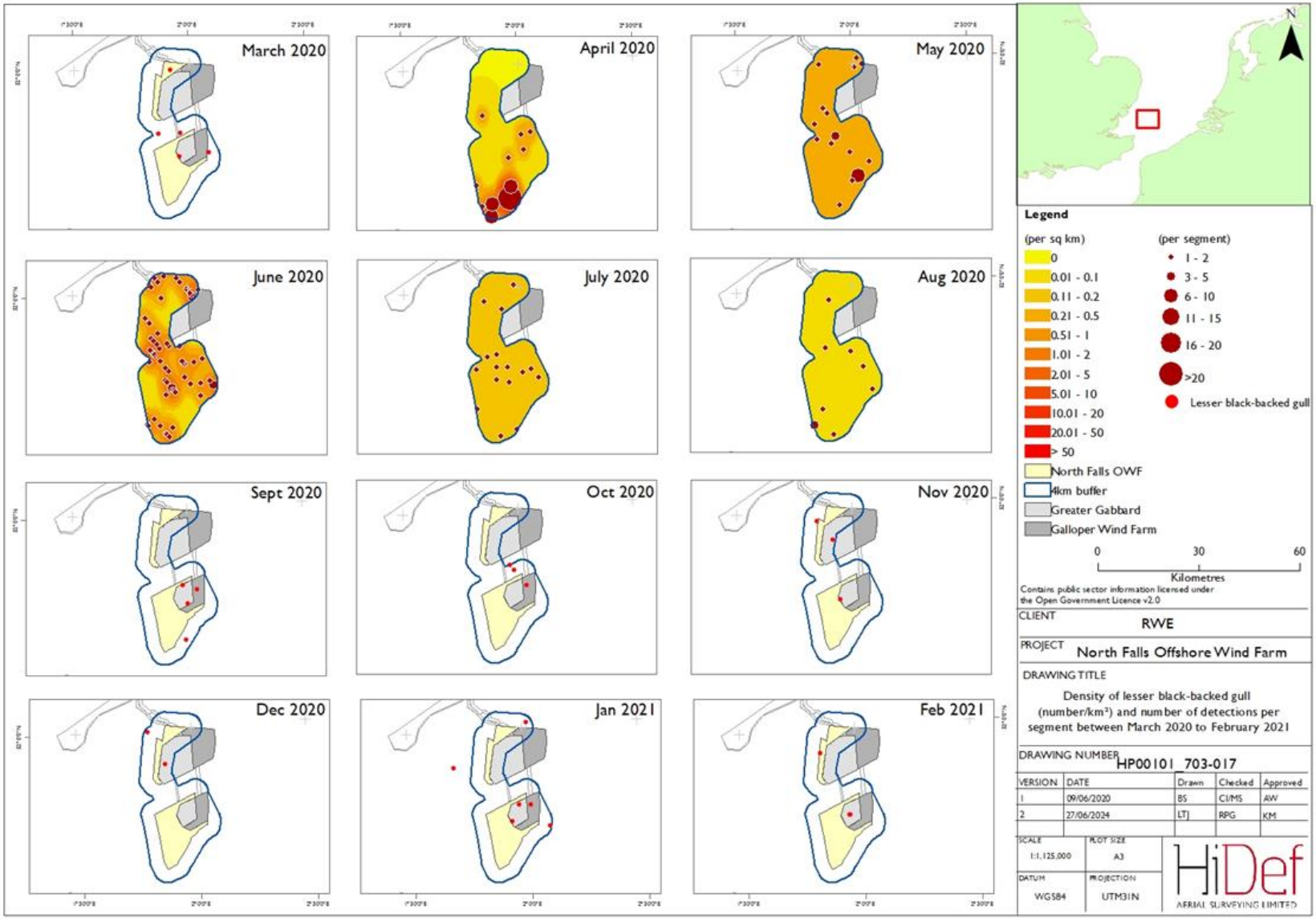

Figure 13.2.15 Density of lesser black-backed gulls (number/km²) and number of detections per segment, March 2020 to February 2021

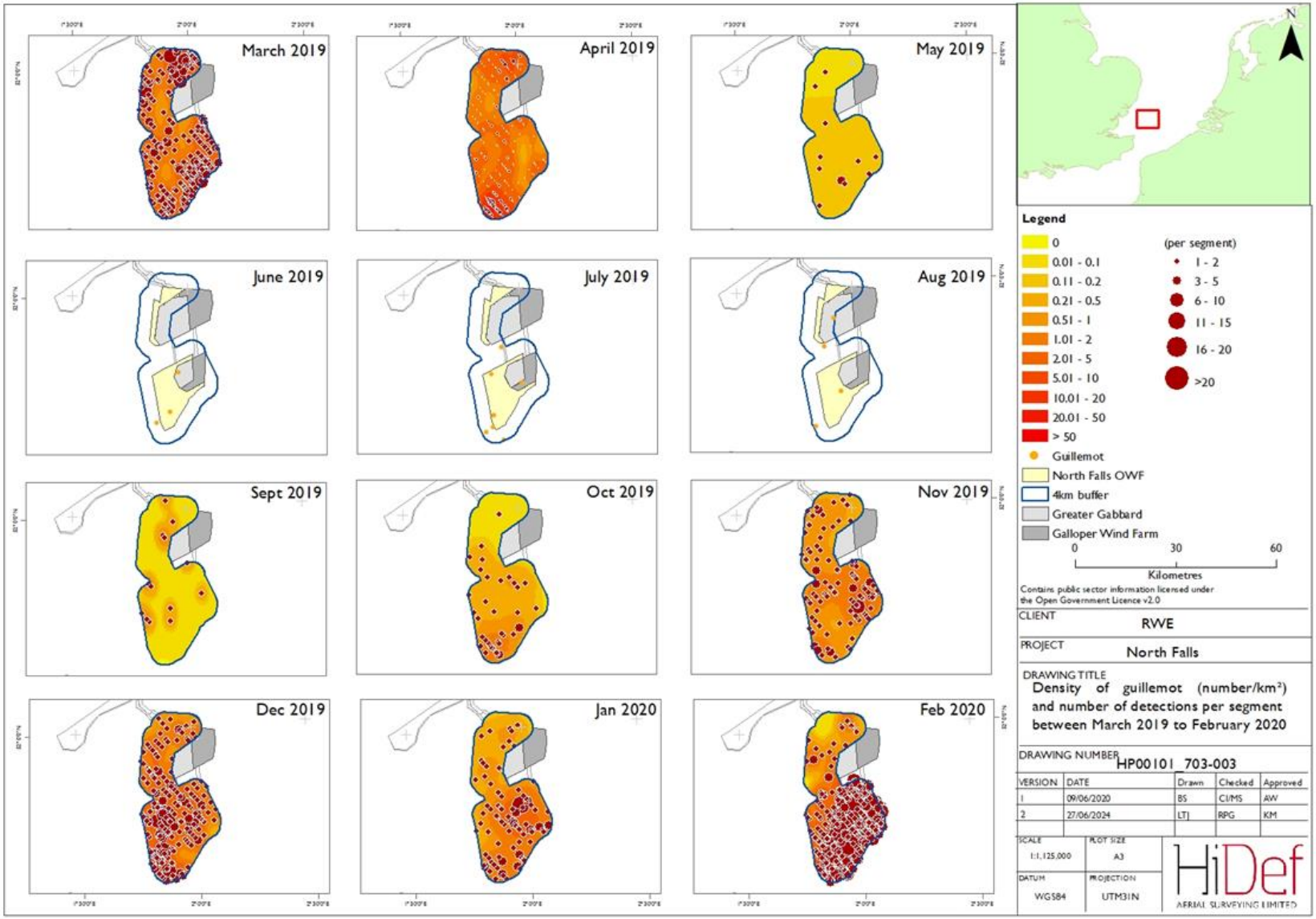

Figure 13.2.16 Density of guillemots (number/km²) and number of detections per segment, March 2019 to February 2020

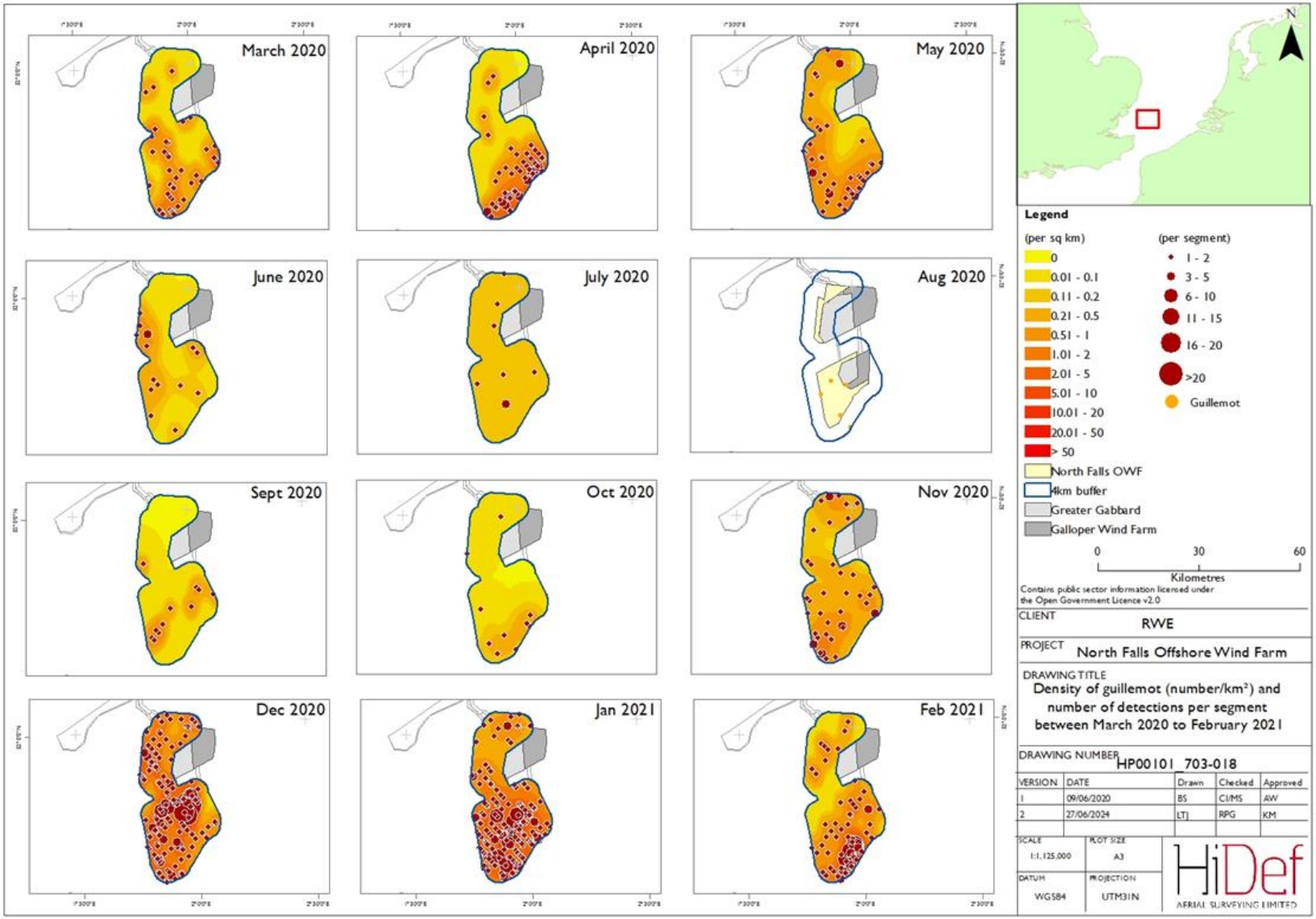

Figure 13.2.17 Density of guillemots (number/km²) and number of detections per segment, March 2020 to February 2021

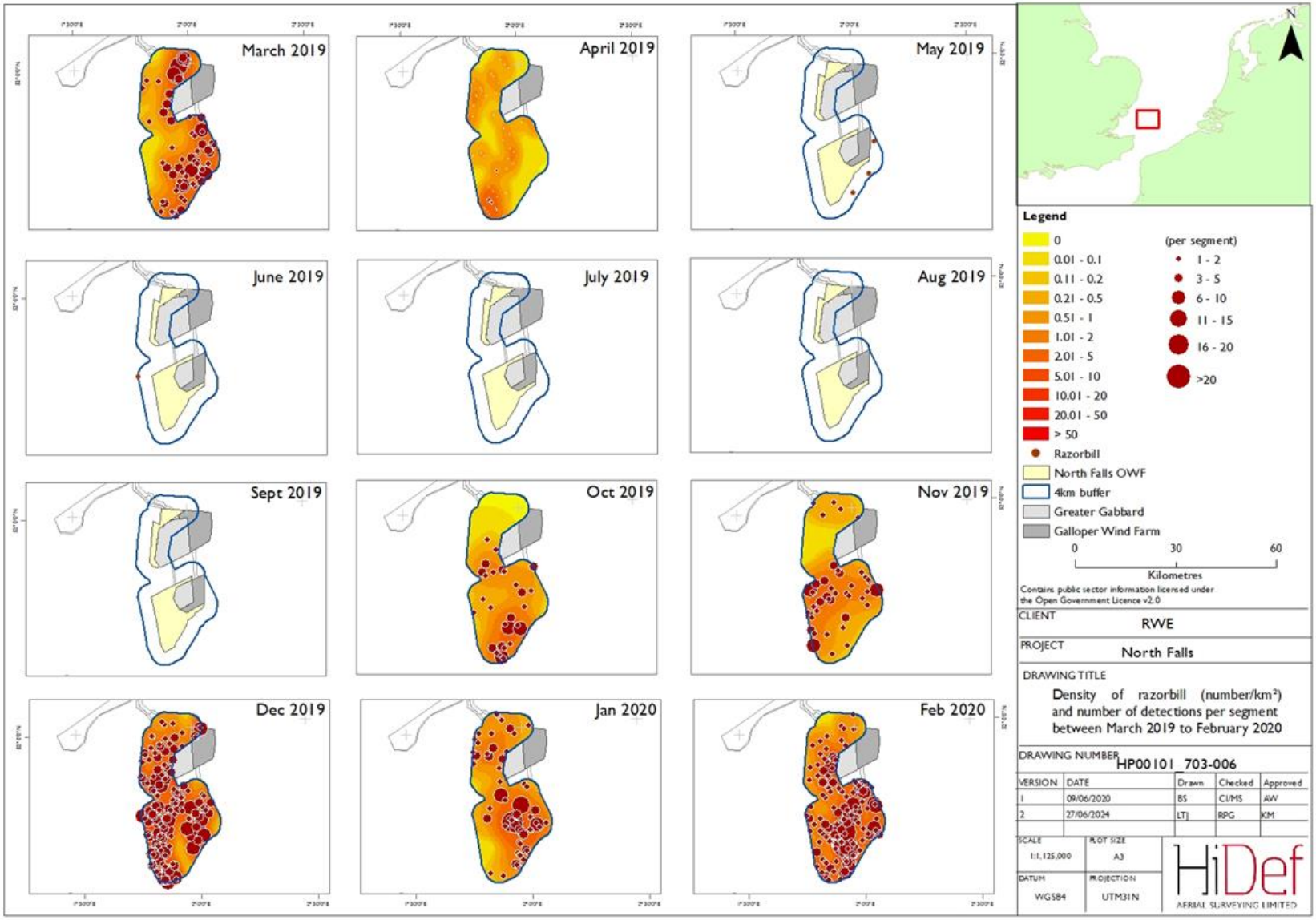

Figure 13.2.18 Density of razorbills (number/km²) and number of detections per segment, March 2019 to February 2020

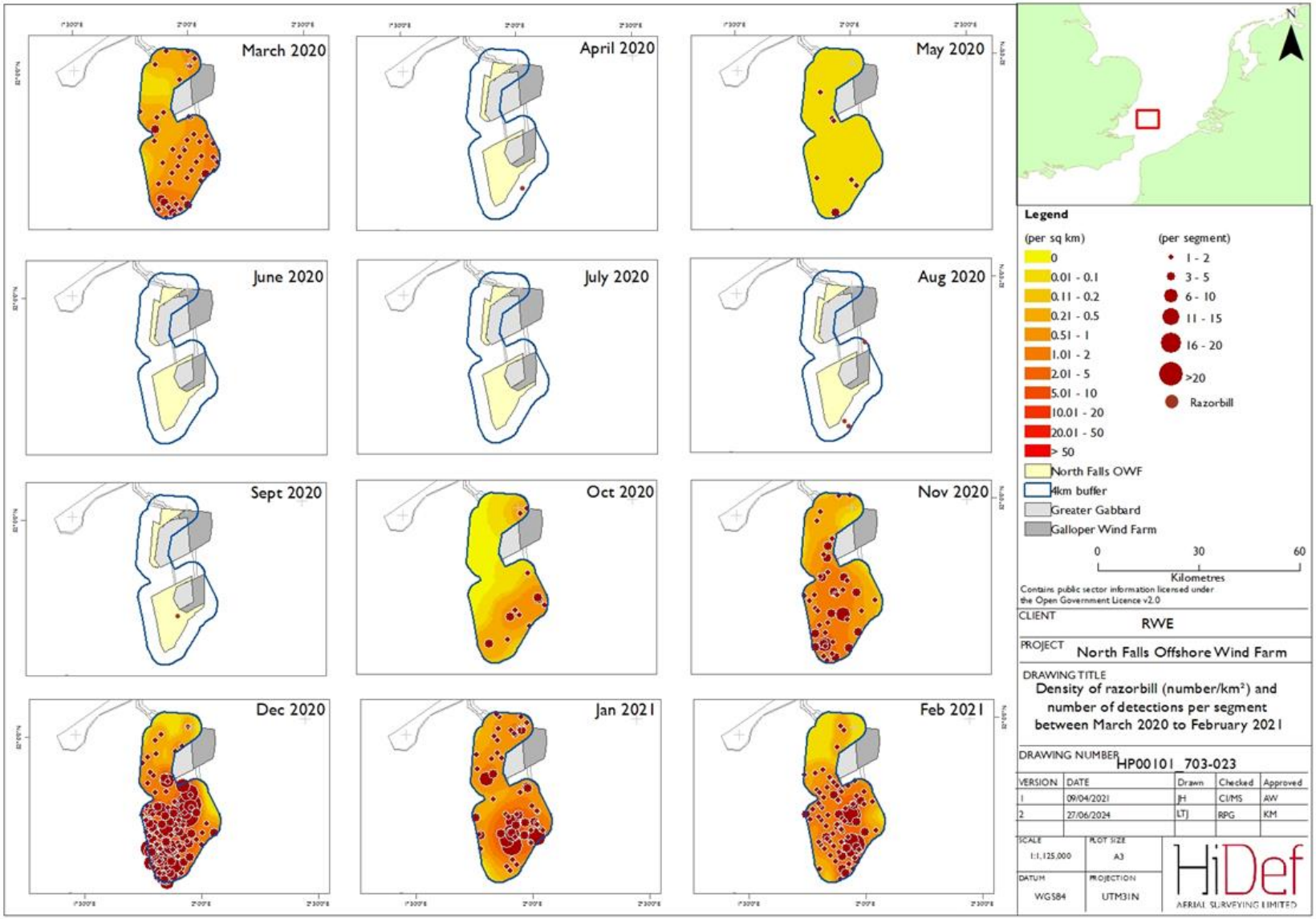

Figure 13.2.19 Density of razorbills (number/km²) and number of detections per segment, March 2020 to February 2021

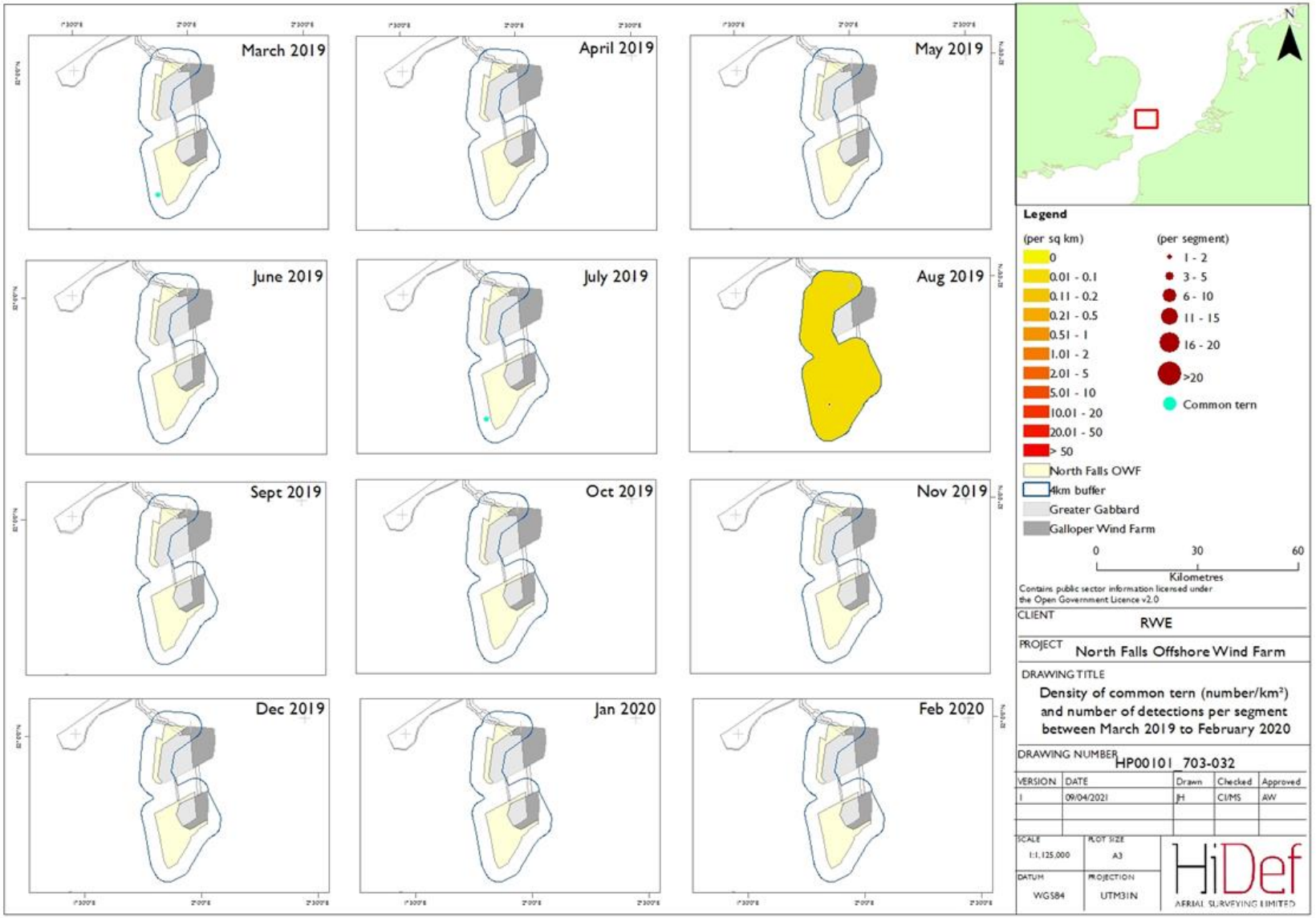

Figure 13.2.20 Density of common terns (number/km²) and number of detections per segment, March 2019 to February 2020

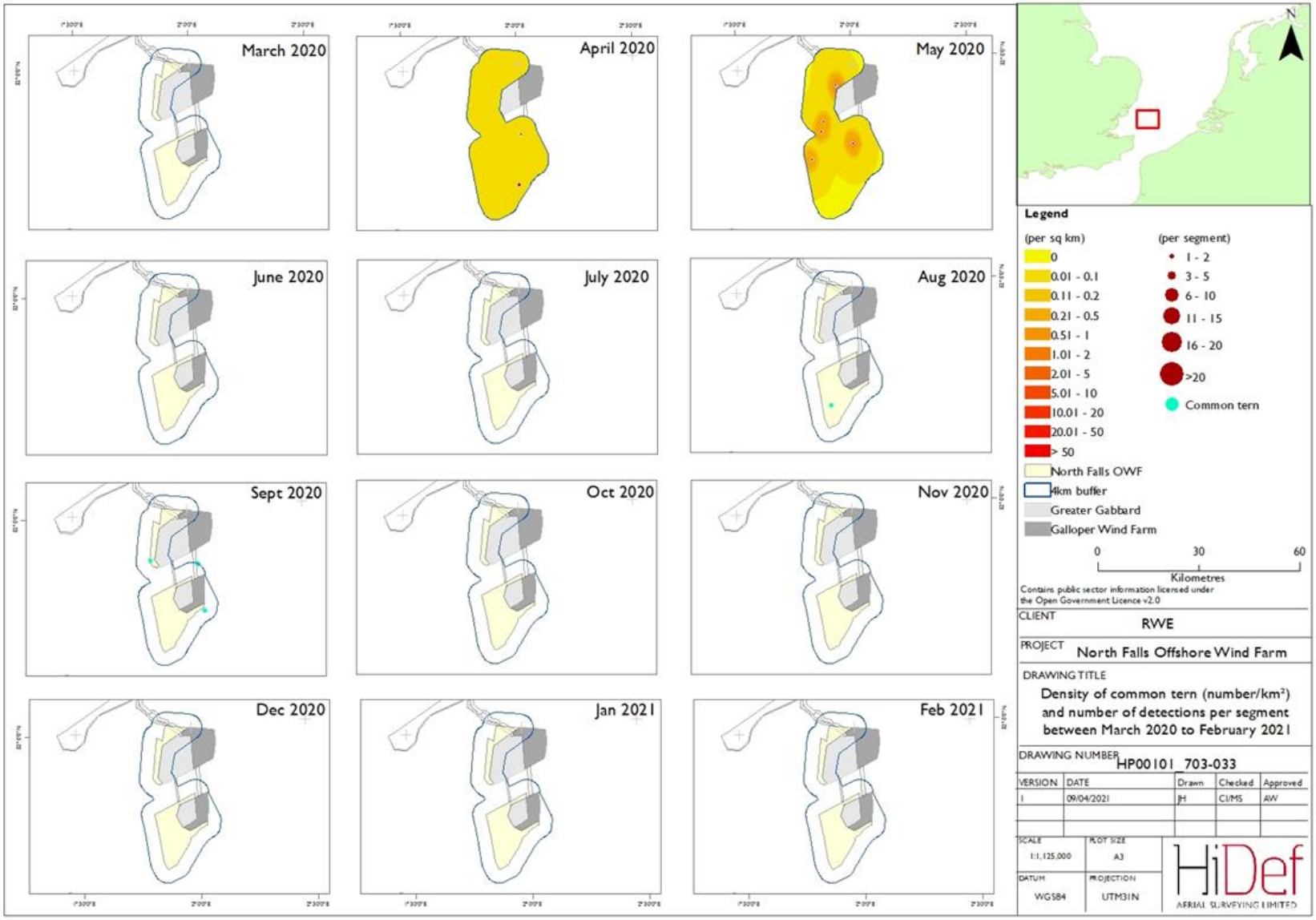

Figure 13.2.21 Density of common terns (number/km²) and number of detections per segment, March 2020 to February 2021

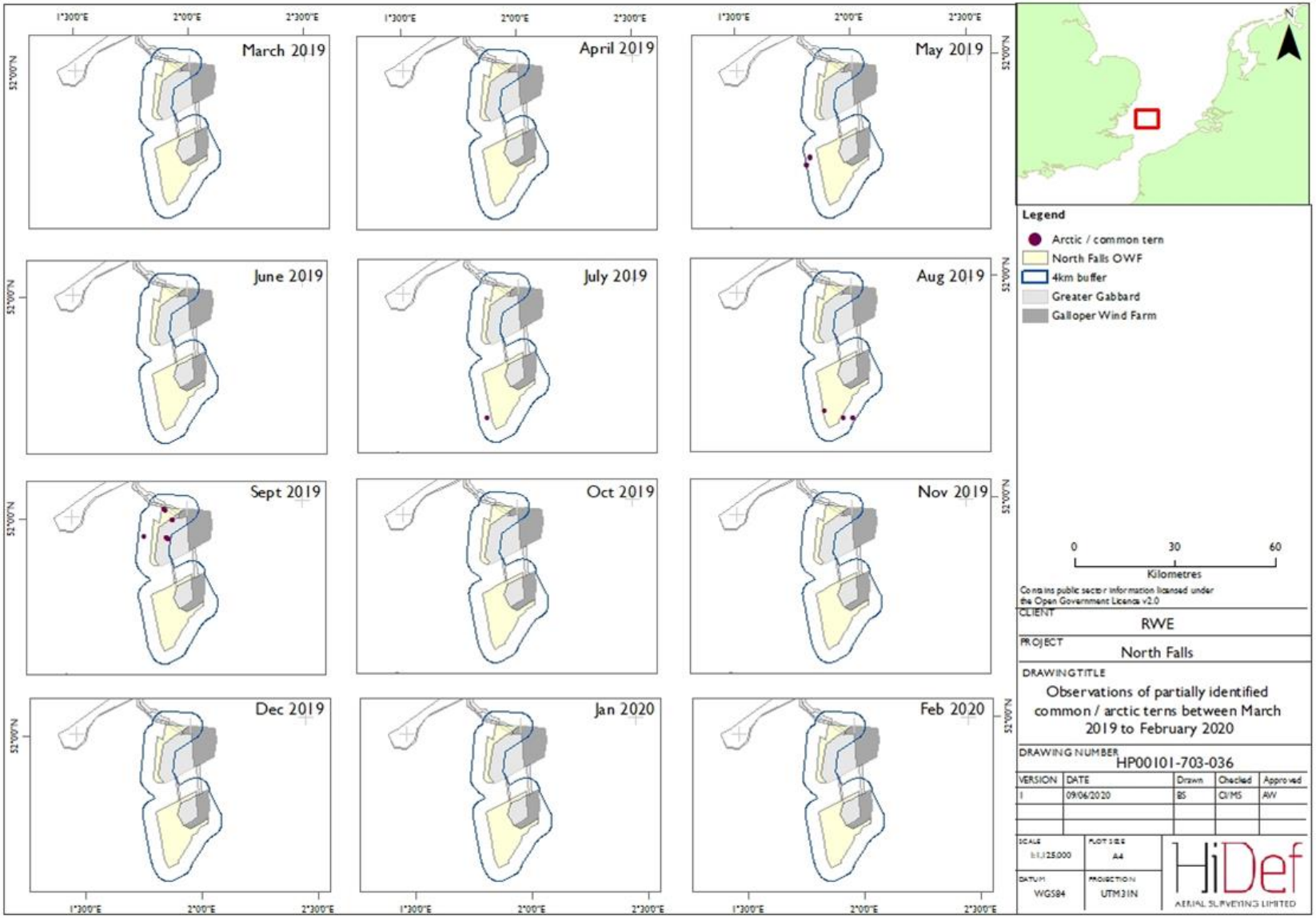

Figure 13.2.22 Detections of partially identified Arctic /common terns, March 2019 to February 2020

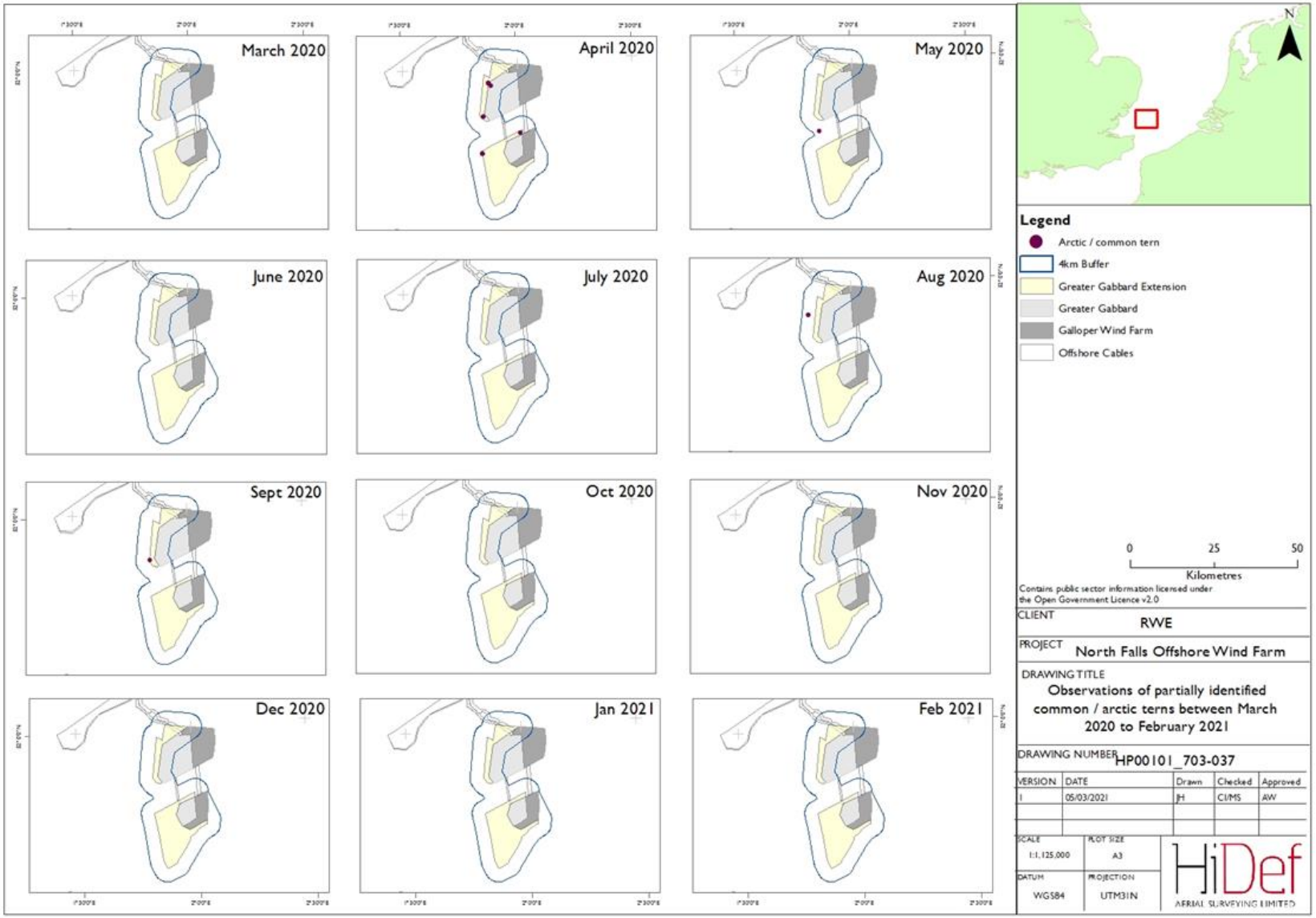

Figure 13.2.23 Detections of partially identified Arctic /common terns, March 2020 to February 2021

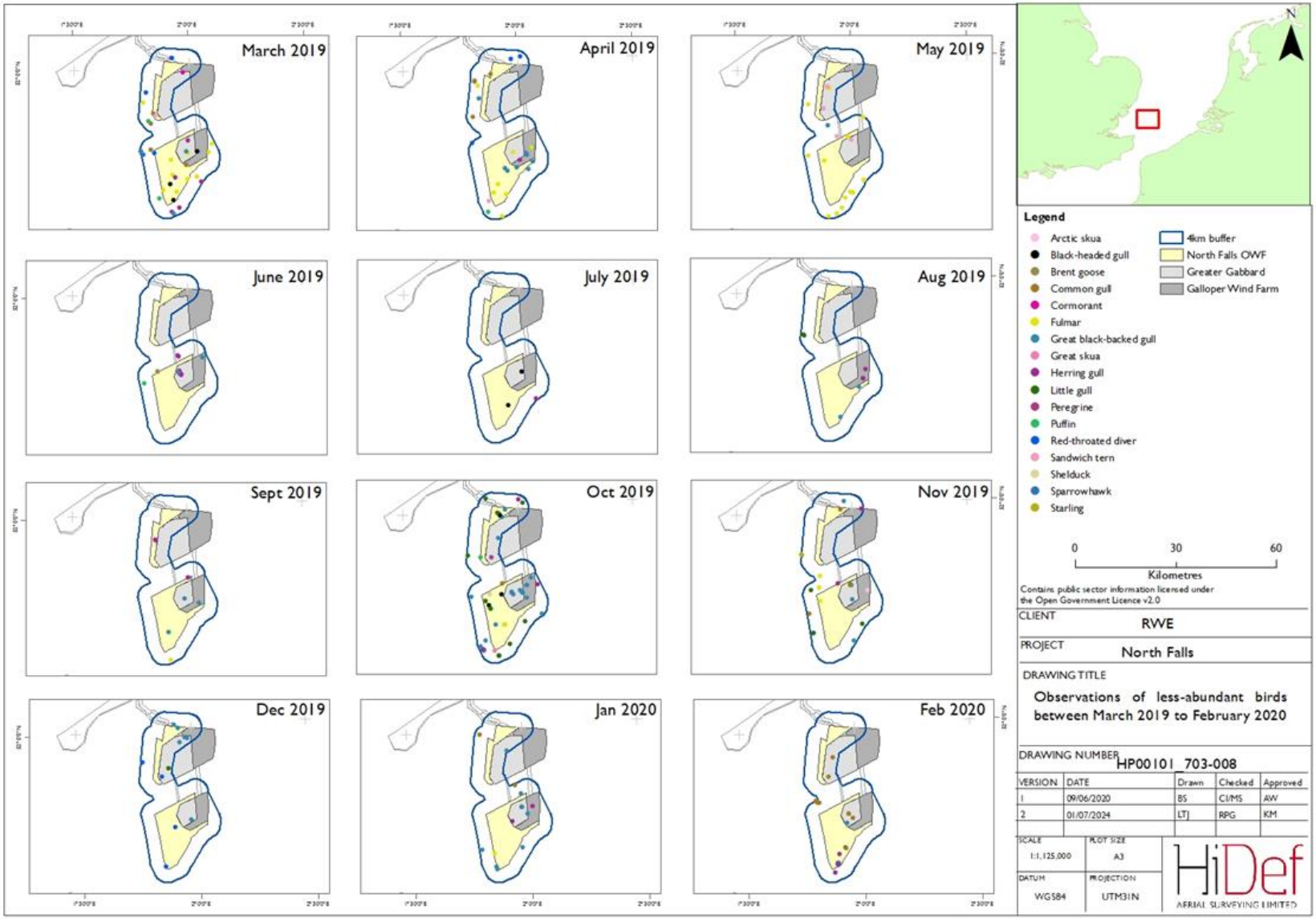

Figure 13.2.24 Detections of less abundant bird species, March 2019 to February 2020

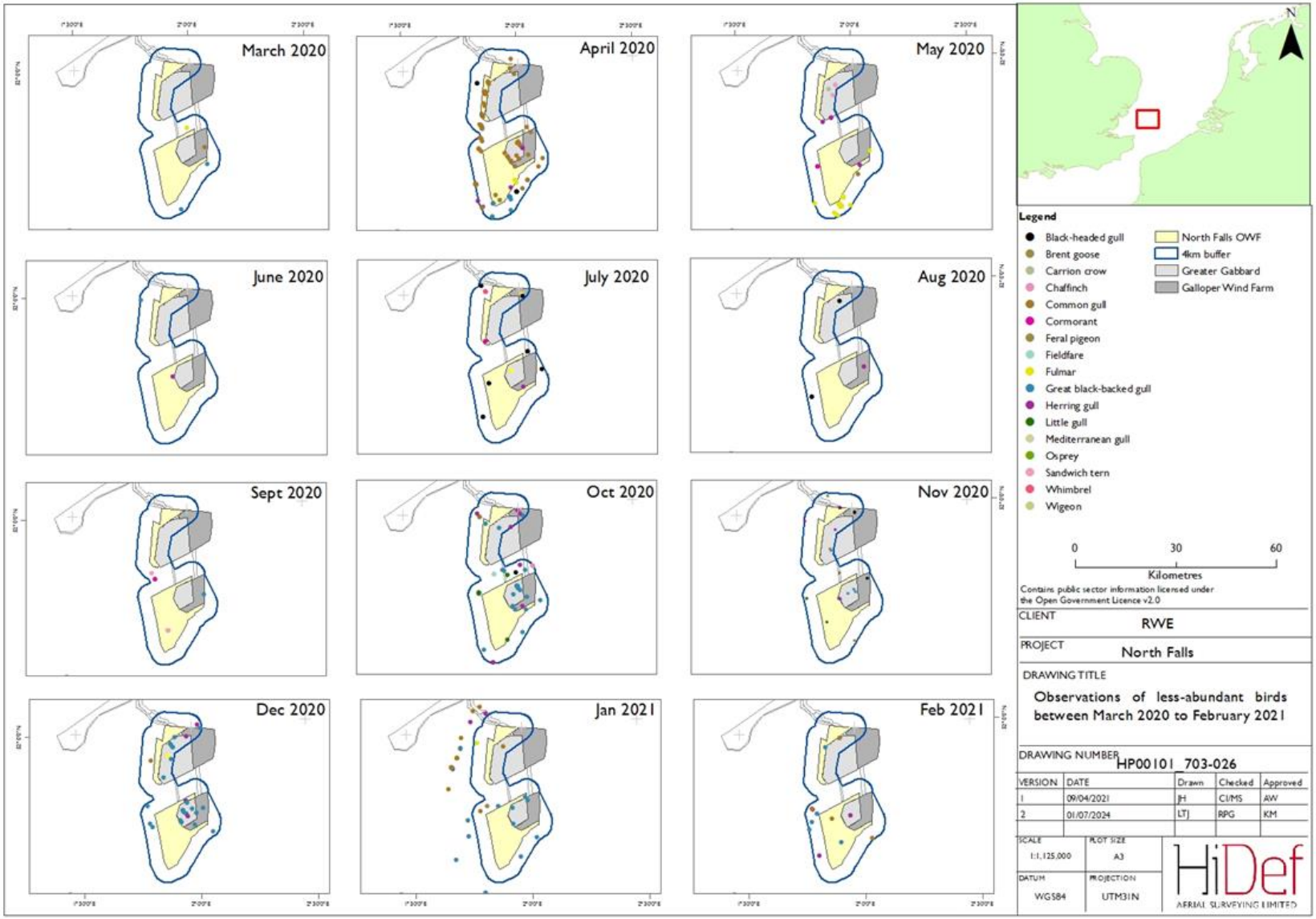

Figure 13.2.25 Detections of less abundant bird species, March 2020 to February 2021

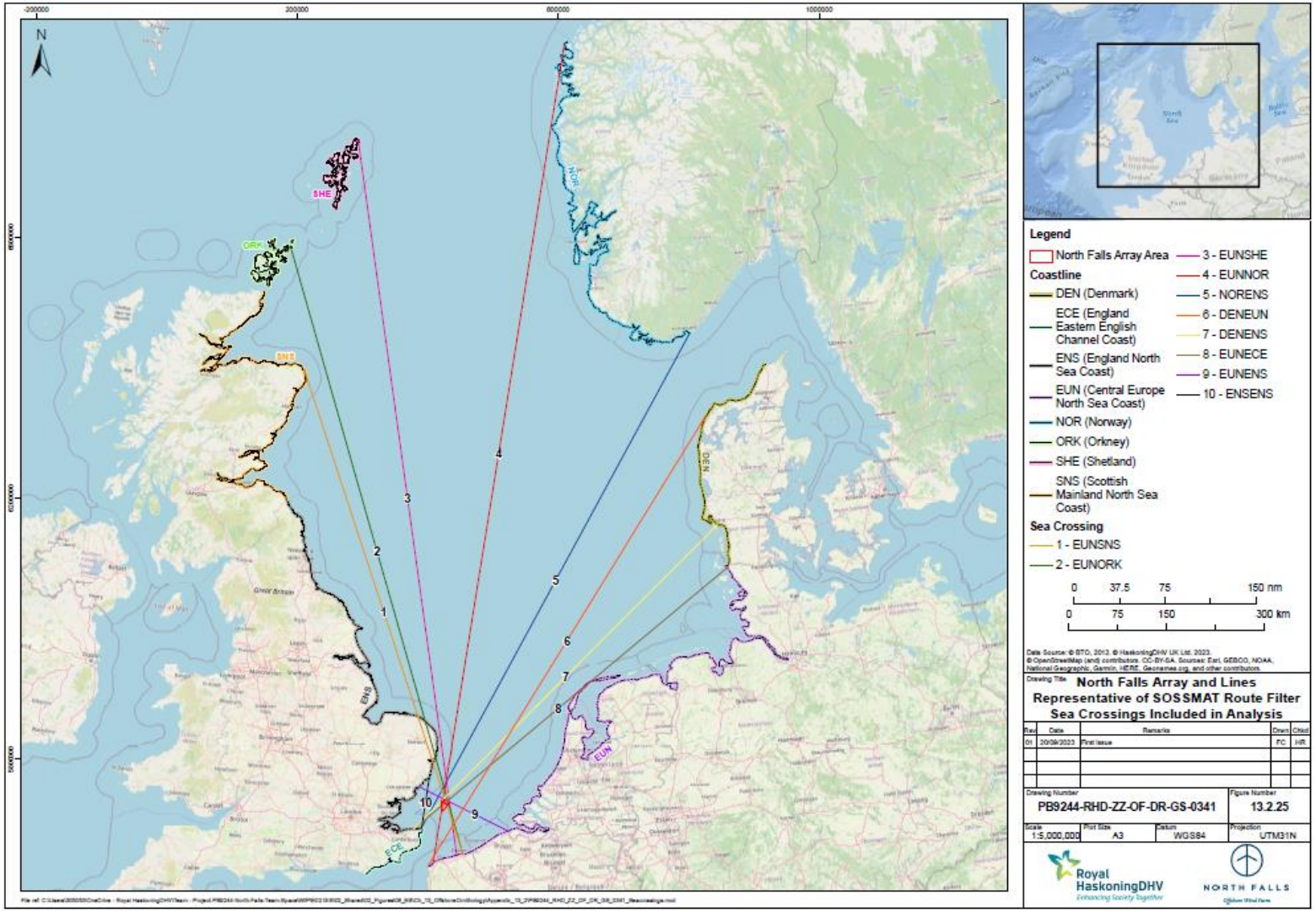

Figure 13.2.26 Migratory CRM: North Falls Array and Lines Representative of SOSSMAT Route Filter Sea Crossings Included in Analysis

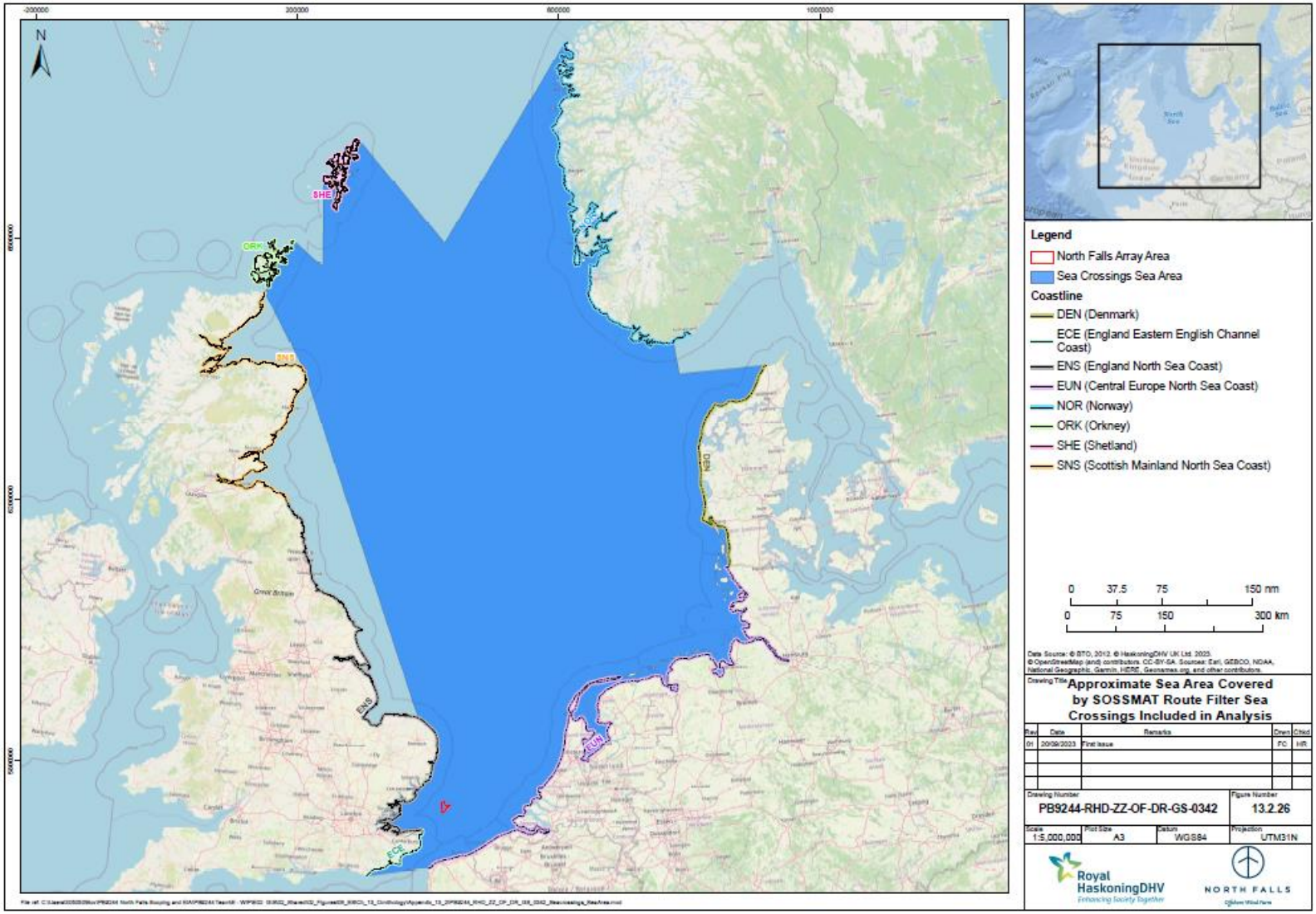

Figure 13.2.27 Migratory CRM: Approximate Sea Area Covered by SOSSMAP Route Filter Sea Crossings Included in Analysis