




**F I V E**   
**ESTUARIES**  
OFFSHORE WIND FARM

**FIVE ESTUARIES**  
**OFFSHORE WIND FARM**  
PRELIMINARY ENVIRONMENTAL  
INFORMATION REPORT

VOLUME 4, ANNEX 4.8: COLLISION RISK  
MODELLING INPUTS AND OUTPUTS

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MacArthur  
Green

# Five Estuaries Offshore Windfarm

## Ornithology Technical Annex 4.8 Collision Risk Modelling inputs and outputs

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## 1 INTRODUCTION

This annex provides tables of the collision risk modelling (CRM) input parameters for the Five Estuaries Offshore Windfarm (VE) and the collision mortality results obtained.

The input data comprise:

- Tables 1 to 18: densities of birds in flight in the VE Array Areas (North and South) in each month, presented as the mean, standard deviation and upper and lower 95% confidence range derived from 1,000 nonparametric bootstrap simulations (the monthly values were derived as the average of the two months available);
- Table 19: the Array Area and turbine data;
- Table 20: biometrics of each species modelled (e.g. wingspan, body length, etc.);

And the outputs are presented in:

- Tables 21 to 37: monthly collision risk for each species assessed using turbine parameter set 1;
- Tables 38 to 54: seasonal collision risk for each species assessed using turbine parameter set 1;
- Tables 55 to 71: monthly collision risk for each species assessed using turbine parameter set 2; and,
- Tables 72 to 88: seasonal collision risk for each species assessed using turbine parameter set 2;

For the avoidance of doubt, the avoidance rates used for CRM were those advised by Natural England<sup>1</sup>, as follows:

- |   |                 |
|---|-----------------|
| • Gannet  | 99.72% - 99.88% |
| • Kittiwake   | 99.2%           |
| • Herring gull, lesser black-backed gull, great black-backed gull | 99.4%           |
| • Little gull, common gull, black-headed gull                     | 99.5%           |
| • Tern species  | 99.0%           |
| • All other species   | 99.0%           |

Nocturnal Activity Factors (NAF) used for CRM were the range advised by Natural England<sup>1</sup>.

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<sup>1</sup> Natural England interim advice on updated Collision Risk Modelling parameters (July 2022)

Table 1. VE North. Monthly density of Common tern recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0.05 (0.04)	0-0.16
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 2. VE North. Monthly density of Fulmar recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.05 (0.04)	0-0.16
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0.05 (0.04)	0-0.16
May	0 (0)	0-0
Jun	0.05 (0.04)	0-0.15
Jul	0.26 (0.19)	0-0.68
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 3. VE North. Monthly density of Gannet recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0.05 (0.04)	0-0.16
Apr	0.05 (0.04)	0-0.16
May	0 (0)	0-0
Jun	0.16 (0.08)	0-0.32
Jul	0.15 (0.07)	0-0.3
Aug	0.1 (0.08)	0-0.26
Sep	0 (0)	0-0
Oct	0.26 (0.19)	0-0.68
Nov	1.09 (0.55)	0.11-2.22
Dec	0.05 (0.04)	0-0.15



Table 4. VE North. Monthly density of Great black-backed gull recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.05 (0.04)	0-0.15
Feb	0 (0)	0-0
Mar	0.05 (0.04)	0-0.16
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0.05 (0.04)	0-0.15

Table 5. VE North. Monthly density of Guillemot recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.21 (0.14)	0-0.52
Feb	0.1 (0.08)	0-0.3
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 6. VE North. Monthly density of Herring gull recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0.05 (0.04)	0-0.11
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0.05 (0.04)	0-0.15

Table 7. VE North. Monthly density of Kittiwake recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.15 (0.1)	0-0.36
Feb	0.4 (0.23)	0-0.9
Mar	0.37 (0.19)	0.05-0.74
Apr	0.26 (0.16)	0-0.63
May	0 (0)	0-0
Jun	0.27 (0.11)	0.05-0.48
Jul	0.1 (0.07)	0-0.25
Aug	0 (0)	0-0
Sep	0.11 (0.09)	0-0.32
Oct	0.05 (0.04)	0-0.16
Nov	0.31 (0.17)	0.05-0.68
Dec	0.15 (0.11)	0-0.4

Table 8. VE North. Monthly density of Lesser black-backed gull recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.05 (0.04)	0-0.15
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0.36 (0.23)	0-0.88
Jul	1.89 (1.42)	0-4.93
Aug	0 (0)	0-0
Sep	0.05 (0.04)	0-0.15
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 9. VE North. Monthly density of Little gull recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0.05 (0.04)	0-0.16
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 10. VE North. Monthly density of Razorbill (including unidentified auks apportioned using identified auk ratios) recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0.25 (0.19)	0-0.66
Feb	0.1 (0.08)	0-0.3
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0.3 (0.18)	0-0.71
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 11. VE South. Monthly density of Common gull recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0.06 (0.04)	0-0.11
Mar	0.16 (0.09)	0-0.33
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0



Table 12. VE South. Monthly density of Cormorant recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0 (0)	0-0
Sep	0.35 (0.29)	0-1.04
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 13. VE South. Monthly density of Gannet recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0.16 (0.13)	0-0.44
Mar	0.06 (0.04)	0-0.17
Apr	0.17 (0.11)	0-0.39
May	0.06 (0.04)	0-0.11
Jun	0.06 (0.05)	0-0.12
Jul	0 (0)	0-0
Aug	0.06 (0.05)	0-0.17
Sep	0.4 (0.21)	0.06-0.85
Oct	0.22 (0.14)	0-0.5
Nov	0.69 (0.3)	0.17-1.26
Dec	0 (0)	0-0

Table 14. VE South. Monthly density of Great skua recorded in flight, S.D. and 95% confidence intervals, in the Array Area only.

Month	Density	
	Array Area	
	Estimate (S.D.)	95% c.i.
Jan	0 (0)	0-0
Feb	0 (0)	0-0
Mar	0 (0)	0-0
Apr	0 (0)	0-0
May	0 (0)	0-0
Jun	0 (0)	0-0
Jul	0 (0)	0-0
Aug	0.06 (0.05)	0-0.17
Sep	0 (0)	0-0
Oct	0 (0)	0-0
Nov	0 (0)	0-0
Dec	0 (0)	0-0

Table 19. VE Array Area and turbine data used in the CRM.

Parameter	Turbine parameter set 1		Turbine parameter set 2	
	North	South	North	South
No. turbines	31	48	16	25
Rotor radius (m)	129.6	129.6	180.0	180.0
Hub height (m; HAT)	157.6	157.6	208.0	208.0
Tidal offset (m; MSL to HAT)	1.2	1.2	1.2	1.2
Max. blade width (m)	9.4	9.4	13.2	13.2
Mean RPM	7.3	7.3	5.3	5.3
Mean blade angle (°)	15	15	15	15
Array Area width (km)	14.5	9.7	14.5	9.7
Array Area latitude (centre; °)	51.97	51.81	51.97	51.81
Percentage operational	95	95	95	95

Table 20: Biometrics of each species modelled. Species with two sets of parameters (gannet, kittiwake, large gulls) have been modelled with each set (i.e. row of this table) in order of presentation in this report (the second set is identified in each case in the output table heading).

Species	Body length (m)	Wingspan (m)	Flight speed (ms <sup>-1</sup> )	Nocturnal activity factor (1 to 5 / %)	Flight type	Avoidance rate (%)
Black-headed gull	0.37	1.10	11.9	3 / 50%	Flapping	99.5
Common gull	0.42	1.30	13.4	3 / 50%	Flapping	99.5
Common tern	0.33	0.87	10.5	5 / 100%	Flapping	99.0
Fulmar	0.48	1.07	13.0	4 / 75%	Flapping	99.0
Gannet	0.94	1.72	14.9	1.32 / 8%	Flapping	99.72
						99.88
Great black-backed gull	0.71	1.58	13.7	3 / 50%	Flapping	99.4
				2 / 25%		
Great skua	0.56	1.36	14.9	1 / 0%	Flapping	99.0
Herring gull	0.60	1.44	12.8	3 / 50%	Flapping	99.4
				2 / 25%		
Kittiwake	0.39	1.08	13.1	3 / 50%	Flapping	99.2
				2 / 25%		
Lesser black-backed gull	0.58	1.42	13.1	3 / 50%	Flapping	99.4
				2 / 25%		
Little gull	0.26	0.78	12.2	2 / 25%	Flapping	99.5
Sandwich tern	0.39	1.0	10.5	5 / 100%	Flapping	99.0

Table 21. Black-headed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.49	0.98	0	0.49	0.98
Aug	0	0	0	0	0.00	0.00	0	0.00	0.00
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.22	0.66	0	0.22	0.66
Nov	0	0	0	0	0.20	0.61	0	0.20	0.61
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.91	2.25	0	0.91	2.25

Table 22. Common Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0.39	0.78	0	0.39	0.78
Mar	0	0.00	0.00	0	1.36	2.73	0	1.36	2.73
Apr	0	0.27	0.82	0	0.00	0.00	0	0.27	0.82
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.24	0.72	0	0.00	0.00	0	0.24	0.72
Annual	0	0.51	1.54	0	1.75	3.51	0	2.27	5.05

Table 23. Common Tern monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr	0	0.00	0.00	0	0	0	0	0.00	0.00
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.13	0.38	0	0	0	0	0.13	0.38
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.00	0.00	0	0	0	0	0.00	0.00
Annual	0	0.13	0.38	0	0	0	0	0.13	0.38

Table 24. Fulmar monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.02
Feb	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar	0	0.00	0.00	0.01	0.05	0.11	0.01	0.05	0.11
Apr	0	0.01	0.02	0.00	0.01	0.04	0.00	0.02	0.06
May	0	0.00	0.00	0.00	0.03	0.06	0.00	0.03	0.06
Jun	0	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.02
Jul	0	0.04	0.11	0.00	0.00	0.00	0.00	0.04	0.11
Aug	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	0	0.07	0.18	0.01	0.10	0.20	0.01	0.16	0.39



Table 25. Gannet monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.0	0.00	0.00	0.00	0.24	0.64	0.00	0.24	0.64
Mar	0.0	0.06	0.19	0.00	0.11	0.32	0.00	0.17	0.51
Apr	0.0	0.07	0.21	0.00	0.35	0.82	0.00	0.42	1.03
May	0.0	0.00	0.00	0.00	0.13	0.26	0.00	0.13	0.26
Jun	0.0	0.25	0.50	0.00	0.14	0.28	0.00	0.39	0.79
Jul	0.0	0.24	0.48	0.00	0.00	0.00	0.00	0.24	0.48
Aug	0.0	0.15	0.38	0.00	0.13	0.39	0.00	0.28	0.77
Sep	0.0	0.00	0.00	0.11	0.77	1.64	0.11	0.77	1.64
Oct	0.0	0.29	0.75	0.00	0.38	0.87	0.00	0.68	1.62
Nov	0.1	1.01	2.06	0.25	0.99	1.81	0.35	2.00	3.87
Dec	0.0	0.04	0.13	0.00	0.00	0.00	0.00	0.04	0.13
Annual	0.1	2.12	4.71	0.36	3.24	7.04	0.46	5.36	11.75

Table 26. Gannet2 monthly mean collision estimates and 95% confidence intervals (calculated using higher value of macro-avoidance rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.10	0.28	0.00	0.10	0.28
Mar	0.00	0.03	0.08	0.00	0.05	0.14	0.00	0.07	0.22
Apr	0.00	0.03	0.09	0.00	0.15	0.35	0.00	0.18	0.44
May	0.00	0.00	0.00	0.00	0.06	0.11	0.00	0.06	0.11
Jun	0.00	0.11	0.22	0.00	0.06	0.12	0.00	0.17	0.34
Jul	0.00	0.10	0.21	0.00	0.00	0.00	0.00	0.10	0.21
Aug	0.00	0.06	0.16	0.00	0.06	0.17	0.00	0.12	0.33
Sep	0.00	0.00	0.00	0.05	0.33	0.70	0.05	0.33	0.70
Oct	0.00	0.12	0.32	0.00	0.16	0.37	0.00	0.29	0.70
Nov	0.04	0.43	0.88	0.11	0.42	0.78	0.15	0.86	1.66
Dec	0.00	0.02	0.06	0.00	0.00	0.00	0.00	0.02	0.06
Annual	0.04	0.91	2.02	0.15	1.39	3.02	0.20	2.30	5.04

Table 27. Great Black-backed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.59	1.78	0	0.45	1.35	0	1.04	3.12
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.68	2.05	0	0.57	1.70	0	1.25	3.75
Apr	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.58	1.75	0	0.43	1.30	0	1.02	3.05
Annual	0	1.86	5.57	0	1.45	4.35	0	3.31	9.92

Table 28. Great Black-backed Gull<sup>2</sup> monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.45	1.35	0	0	0	0	0.45	1.35
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.57	1.70	0	0	0	0	0.57	1.70
Apr	0	0.00	0.00	0	0	0	0	0.00	0.00
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.43	1.30	0	0	0	0	0.43	1.30
Annual	0	1.45	4.35	0	0	0	0	1.45	4.35

Table 29. Great Skua monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.00	0.00	0	0.00	0.00
Aug	0	0	0	0	0.13	0.38	0	0.13	0.38
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.00	0.00	0	0.00	0.00
Nov	0	0	0	0	0.00	0.00	0	0.00	0.00
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.13	0.38	0	0.13	0.38

Table 30. Herring Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Apr	0	0.00	0.00	0	0	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Jul	0	0.69	1.39	0	0	0.00	0	0.69	1.39
Aug	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	1	3.01	0	1.00	3.01
Nov	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Dec	0	0.52	1.57	0	0	0.00	0	0.52	1.57
Annual	0	1.21	2.96	0	1	3.01	0	2.21	5.97

Table 31. Herring Gull2 monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Apr	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.62	1.26	0	0.00	0.00	0	0.62	1.26
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.81	2.43	0	0.81	2.43
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.39	1.17	0	0.00	0.00	0	0.39	1.17
Annual	0	1.01	2.43	0	0.81	2.43	0	1.82	4.86

Table 32. Kittiwake monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.66	1.53	0.36	1.12	2.23	0.36	1.77	3.76
Feb	0.00	1.62	3.65	0.69	3.77	6.85	0.69	5.39	10.50
Mar	0.25	1.74	3.47	0.83	5.77	12.33	1.08	7.51	15.80
Apr	0.00	1.27	3.04	0.00	0.43	1.29	0.00	1.70	4.33
May	0.00	0.00	0.00	0.00	1.81	4.08	0.00	1.81	4.08
Jun	0.28	1.38	2.48	0.00	1.37	3.18	0.28	2.75	5.66
Jul	0.00	0.54	1.34	0.00	0.45	1.36	0.00	0.99	2.69
Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0.00	0.49	1.48	0.00	0.00	0.00	0.00	0.49	1.48
Oct	0.00	0.24	0.72	0.00	0.00	0.00	0.00	0.24	0.72
Nov	0.22	1.31	2.84	0.75	3.31	5.88	0.97	4.63	8.72
Dec	0.00	0.64	1.70	1.08	4.31	8.27	1.08	4.95	9.96
Annual	0.74	9.88	22.26	3.71	22.34	45.46	4.45	32.22	67.72



Table 33. Kittiwake2 monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.50	1.16	0.27	0.85	1.69	0.27	1.34	2.85
Feb	0.00	1.28	2.89	0.54	2.99	5.43	0.54	4.27	8.32
Mar	0.21	1.44	2.88	0.69	4.79	10.24	0.89	6.23	13.12
Apr	0.00	1.10	2.63	0.00	0.37	1.11	0.00	1.47	3.75
May	0.00	0.00	0.00	0.00	1.62	3.65	0.00	1.62	3.65
Jun	0.25	1.25	2.26	0.00	1.25	2.89	0.25	2.50	5.15
Jul	0.00	0.48	1.21	0.00	0.41	1.22	0.00	0.89	2.43
Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0.00	0.42	1.25	0.00	0.00	0.00	0.00	0.42	1.25
Oct	0.00	0.19	0.58	0.00	0.00	0.00	0.00	0.19	0.58
Nov	0.17	1.01	2.19	0.58	2.55	4.53	0.74	3.56	6.72
Dec	0.00	0.48	1.27	0.81	3.22	6.18	0.81	3.70	7.44
Annual	0.62	8.16	18.32	2.89	18.04	36.94	3.51	26.19	55.26

Table 34. Lesser Black-backed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.44	1.33	0	0.00	0.00	0	0.44	1.33
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.83	2.48	0	0.83	2.48
Apr	0	0.00	0.00	0	0.88	2.65	0	0.88	2.65
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	3.86	9.40	0	7.61	20.92	0	11.47	30.32
Jul	0	20.65	53.91	0	0.00	0.00	0	20.65	53.91
Aug	0	0.00	0.00	0	2.76	7.34	0	2.76	7.34
Sep	0	0.49	1.46	0	1.73	5.20	0	2.22	6.65
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.74	2.22	0	0.74	2.22
Dec	0	0.00	0.00	0	1.48	4.44	0	1.48	4.44
Annual	0	25.44	66.10	0	16.03	45.24	0	41.47	111.35

Table 35. Lesser Black-backed Gull<sup>2</sup> monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.34	1.01	0	0.00	0.00	0	0.34	1.01
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.69	2.06	0	0.69	2.06
Apr	0	0.00	0.00	0	0.77	2.30	0	0.77	2.30
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	3.51	8.55	0	6.92	19.01	0	10.43	27.56
Jul	0	18.65	48.69	0	0.00	0.00	0	18.65	48.69
Aug	0	0.00	0.00	0	2.42	6.45	0	2.42	6.45
Sep	0	0.41	1.23	0	1.47	4.40	0	1.88	5.63
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.57	1.71	0	0.57	1.71
Dec	0	0.00	0.00	0	1.11	3.32	0	1.11	3.32
Annual	0	22.91	59.48	0	13.93	39.24	0	36.84	98.72

Table 36. Little Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr	0	0.12	0.37	0	0	0	0	0.12	0.37
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.00	0.00	0	0	0	0	0.00	0.00
Annual	0	0.12	0.37	0	0	0	0	0.12	0.37

Table 37. Sandwich Tern monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.00	0.00	0	0.00	0.00
Aug	0	0	0	0	0.00	0.00	0	0.00	0.00
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.21	0.64	0	0.21	0.64
Nov	0	0	0	0	0.00	0.00	0	0.00	0.00
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.21	0.64	0	0.21	0.64

Table 38. Black-headed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.49	0.98	0	0.49	0.98
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0	0	0	0.42	1.27	0	0.42	1.27

Table 39. Common Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Autumn migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Winter	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0.51	1.54	0	1.75	3.51	0	2.26	5.05

Table 40. Common Tern seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Breeding (full)	0	0.00	0.00	0	0	0	0	0.00	0.00
Autumn migration	0	0.13	0.38	0	0	0	0	0.13	0.38
Winter	0	0.00	0.00	0	0	0	0	0.00	0.00
Non-breeding	0	0.00	0.00	0	0	0	0	0.00	0.00

Table 41. Fulmar seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding (full)	0	0.07	0.17	0.01	0.09	0.21	0.01	0.16	0.38
Autumn migration	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 42. Gannet seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.0	0.04	0.13	0.00	0.24	0.64	0.00	0.28	0.77
Breeding (full)	0.0	0.77	1.76	0.11	1.63	3.71	0.11	2.40	5.48
Autumn migration	0.1	1.30	2.81	0.25	1.37	2.68	0.35	2.68	5.49
Winter	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 43. Gannet2 seasonal summed collision estimates and 95% confidence intervals (calculated using higher value of macro-avoidance rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	0.02	0.06	0.00	0.10	0.28	0.00	0.12	0.34
Breeding (full)	0.00	0.33	0.76	0.05	0.71	1.59	0.05	1.03	2.35
Autumn migration	0.04	0.55	1.20	0.11	0.58	1.15	0.15	1.15	2.36
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Table 44. Great Black-backed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.59	1.78	0	0.45	1.35	0	1.04	3.12
Breeding (full)	0	0.68	2.05	0	0.57	1.70	0	1.25	3.75
Autumn migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Winter	0	0.58	1.75	0	0.43	1.30	0	1.02	3.05
Non-breeding	0	1.17	3.53	0	0.88	2.65	0	2.06	6.17

Table 45. Great Black-backed Gull2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.45	1.35	0	0	0	0	0.45	1.35
Breeding (full)	0	0.57	1.70	0	0	0	0	0.57	1.70
Autumn migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Winter	0	0.43	1.30	0	0	0	0	0.43	1.30
Non-breeding	0	0.88	2.65	0	0	0	0	0.88	2.65

Table 46. Great Skua seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.13	0.38	0	0.13	0.38
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0	0	0	0.00	0.00	0	0.00	0.00

Table 47. Herring Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0	0.00	0	0.00	0.00
Breeding (full)	0	0.69	1.39	0	0	0.00	0	0.69	1.39
Autumn migration	0	0.00	0.00	0	1	3.01	0	1.00	3.01
Winter	0	0.52	1.57	0	0	0.00	0	0.52	1.57
Non-breeding	0	0.52	1.57	0	1	3.01	0	1.52	4.58

Table 48. Herring Gull2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0.62	1.26	0	0.00	0.00	0	0.62	1.26
Autumn migration	0	0.00	0.00	0	0.81	2.43	0	0.81	2.43
Winter	0	0.39	1.17	0	0.00	0.00	0	0.39	1.17
Non-breeding	0	0.39	1.17	0	0.81	2.43	0	1.20	3.60

Table 49. Kittiwake seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	2.28	5.18	1.05	4.89	9.08	1.05	7.16	14.26
Breeding (full)	0.53	4.93	10.33	0.83	9.83	22.24	1.36	14.76	32.56
Autumn migration	0.22	2.68	6.74	1.83	7.62	14.15	2.05	10.31	20.88
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 50. Kittiwake2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	1.78	4.05	0.81	3.84	7.12	0.81	5.61	11.17
Breeding (full)	0.46	4.27	8.98	0.69	8.44	19.11	1.14	12.71	28.10
Autumn migration	0.17	2.10	5.29	1.39	5.77	10.71	1.55	7.87	15.99
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 51. Lesser Black-backed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.83	2.48	0	0.83	2.48
Breeding (full)	0	24.51	63.31	0	11.25	30.91	0	35.76	94.22
Autumn migration	0	0.49	1.46	0	1.73	5.20	0	2.22	6.65
Winter	0	0.44	1.33	0	2.22	6.66	0	2.66	7.99
Non-breeding	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00

Table 52. Lesser Black-backed Gull<sup>2</sup> seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.69	2.06	0	0.69	2.06
Breeding (full)	0	22.16	57.24	0	10.11	27.76	0	32.27	85.00
Autumn migration	0	0.41	1.23	0	1.47	4.40	0	1.88	5.63
Winter	0	0.34	1.01	0	1.68	5.03	0	2.02	6.04
Non-breeding	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00

Table 53. Little Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Breeding (full)	0	0.12	0.37	0	0	0	0	0.12	0.37
Autumn migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Winter	0	0.00	0.00	0	0	0	0	0.00	0.00
Non-breeding	0	0.00	0.00	0	0	0	0	0.00	0.00

Table 54. Sandwich Tern seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 1.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.00	0.00	0	0.00	0.00
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.21	0.64	0	0.21	0.64
Non-breeding	0	0	0	0	0.21	0.64	0	0.21	0.64

Table 55. Black-headed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.35	0.70	0	0.35	0.70
Aug	0	0	0	0	0.00	0.00	0	0.00	0.00
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.16	0.47	0	0.16	0.47
Nov	0	0	0	0	0.15	0.44	0	0.15	0.44
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.65	1.61	0	0.65	1.61

Table 56. Common Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0.27	0.55	0	0.27	0.55
Mar	0	0.00	0.00	0	0.96	1.92	0	0.96	1.92
Apr	0	0.19	0.57	0	0.00	0.00	0	0.19	0.57
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.17	0.50	0	0.00	0.00	0	0.17	0.50
Annual	0	0.36	1.07	0	1.23	2.46	0	1.59	3.54



Table 57. Common Tern monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr	0	0.00	0.00	0	0	0	0	0.00	0.00
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.09	0.28	0	0	0	0	0.09	0.28
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.00	0.00	0	0	0	0	0.00	0.00
Annual	0	0.09	0.28	0	0	0	0	0.09	0.28

Table 58. Fulmar monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.02
Feb	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar	0	0.00	0.00	0.01	0.04	0.08	0.01	0.04	0.08
Apr	0	0.01	0.02	0.00	0.01	0.03	0.00	0.02	0.05
May	0	0.00	0.00	0.00	0.02	0.04	0.00	0.02	0.04
Jun	0	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.02
Jul	0	0.03	0.08	0.00	0.00	0.00	0.00	0.03	0.08
Aug	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	0	0.05	0.14	0.01	0.07	0.16	0.01	0.12	0.30

Table 59. Gannet monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.16	0.44	0.00	0.16	0.44
Mar	0.00	0.04	0.13	0.00	0.07	0.22	0.00	0.12	0.35
Apr	0.00	0.05	0.14	0.00	0.24	0.56	0.00	0.29	0.70
May	0.00	0.00	0.00	0.00	0.09	0.18	0.00	0.09	0.18
Jun	0.00	0.17	0.34	0.00	0.10	0.19	0.00	0.27	0.53
Jul	0.00	0.16	0.33	0.00	0.00	0.00	0.00	0.16	0.33
Aug	0.00	0.10	0.26	0.00	0.09	0.27	0.00	0.19	0.52
Sep	0.00	0.00	0.00	0.08	0.52	1.12	0.08	0.52	1.12
Oct	0.00	0.20	0.51	0.00	0.26	0.59	0.00	0.46	1.11
Nov	0.07	0.68	1.39	0.17	0.68	1.24	0.24	1.36	2.63
Dec	0.00	0.03	0.09	0.00	0.00	0.00	0.00	0.03	0.09
Annual	0.07	1.44	3.19	0.25	2.22	4.81	0.31	3.65	8.01

Table 60. Gannet2 monthly mean collision estimates and 95% confidence intervals (calculated using higher value of macro-avoidance rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.07	0.19	0.00	0.07	0.19
Mar	0.00	0.02	0.06	0.00	0.03	0.09	0.00	0.05	0.15
Apr	0.00	0.02	0.06	0.00	0.10	0.24	0.00	0.12	0.30
May	0.00	0.00	0.00	0.00	0.04	0.08	0.00	0.04	0.08
Jun	0.00	0.07	0.15	0.00	0.04	0.08	0.00	0.11	0.23
Jul	0.00	0.07	0.14	0.00	0.00	0.00	0.00	0.07	0.14
Aug	0.00	0.04	0.11	0.00	0.04	0.11	0.00	0.08	0.22
Sep	0.00	0.00	0.00	0.03	0.22	0.48	0.03	0.22	0.48
Oct	0.00	0.08	0.22	0.00	0.11	0.25	0.00	0.20	0.47
Nov	0.03	0.29	0.60	0.07	0.29	0.53	0.10	0.58	1.13
Dec	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.01	0.04
Annual	0.03	0.62	1.37	0.11	0.95	2.06	0.13	1.57	3.43

Table 61. Great Black-backed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.40	1.19	0	0.30	0.90	0	0.70	2.10
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.46	1.38	0	0.38	1.14	0	0.84	2.52
Apr	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.39	1.17	0	0.29	0.88	0	0.68	2.05
Annual	0	1.25	3.74	0	0.97	2.92	0	2.22	6.67

Table 62. Great Black-backed Gull<sup>2</sup> monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.30	0.90	0	0	0	0	0.30	0.90
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.38	1.14	0	0	0	0	0.38	1.14
Apr	0	0.00	0.00	0	0	0	0	0.00	0.00
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.29	0.88	0	0	0	0	0.29	0.88
Annual	0	0.97	2.92	0	0	0	0	0.97	2.92

Table 63. Great Skua monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.00	0.00	0	0.00	0.00
Aug	0	0	0	0	0.09	0.28	0	0.09	0.28
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.00	0.00	0	0.00	0.00
Nov	0	0	0	0	0.00	0.00	0	0.00	0.00
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.09	0.28	0	0.09	0.28

Table 64. Herring Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Apr	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.47	0.94	0	0.00	0.00	0	0.47	0.94
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.69	2.06	0	0.69	2.06
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.35	1.06	0	0.00	0.00	0	0.35	1.06
Annual	0	0.82	2.01	0	0.69	2.06	0	1.51	4.07



Table 65. Herring Gull2 monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Apr	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jul	0	0.42	0.85	0	0.00	0.00	0	0.42	0.85
Aug	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Sep	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Oct	0	0.00	0.00	0	0.56	1.67	0	0.56	1.67
Nov	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Dec	0	0.26	0.79	0	0.00	0.00	0	0.26	0.79
Annual	0	0.69	1.65	0	0.56	1.67	0	1.24	3.31

Table 66. Kittiwake monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.46	1.08	0.26	0.79	1.59	0.26	1.26	2.67
Feb	0.00	1.14	2.58	0.49	2.68	4.88	0.49	3.83	7.46
Mar	0.18	1.23	2.45	0.59	4.11	8.78	0.77	5.34	11.23
Apr	0.00	0.89	2.15	0.00	0.31	0.92	0.00	1.20	3.06
May	0.00	0.00	0.00	0.00	1.29	2.90	0.00	1.29	2.90
Jun	0.19	0.97	1.75	0.00	0.98	2.27	0.19	1.95	4.02
Jul	0.00	0.38	0.95	0.00	0.32	0.97	0.00	0.70	1.91
Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0.00	0.35	1.04	0.00	0.00	0.00	0.00	0.35	1.04
Oct	0.00	0.17	0.51	0.00	0.00	0.00	0.00	0.17	0.51
Nov	0.15	0.93	2.01	0.53	2.36	4.19	0.69	3.29	6.19
Dec	0.00	0.45	1.20	0.77	3.07	5.89	0.77	3.52	7.09
Annual	0.52	6.98	15.71	2.64	15.91	32.38	3.16	22.89	48.09

Table 67. Kittiwake2 monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0.00	0.35	0.82	0.20	0.60	1.21	0.20	0.95	2.02
Feb	0.00	0.91	2.04	0.39	2.13	3.87	0.39	3.03	5.91
Mar	0.15	1.02	2.04	0.49	3.41	7.29	0.64	4.43	9.33
Apr	0.00	0.77	1.86	0.00	0.26	0.79	0.00	1.04	2.65
May	0.00	0.00	0.00	0.00	1.15	2.60	0.00	1.15	2.60
Jun	0.18	0.88	1.59	0.00	0.89	2.06	0.18	1.77	3.65
Jul	0.00	0.34	0.85	0.00	0.29	0.87	0.00	0.63	1.73
Aug	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep	0.00	0.29	0.88	0.00	0.00	0.00	0.00	0.29	0.88
Oct	0.00	0.14	0.41	0.00	0.00	0.00	0.00	0.14	0.41
Nov	0.12	0.71	1.54	0.41	1.82	3.23	0.53	2.53	4.77
Dec	0.00	0.34	0.89	0.57	2.30	4.40	0.57	2.63	5.29
Annual	0.44	5.76	12.93	2.06	12.85	26.31	2.50	18.61	39.24

Table 68. Lesser Black-backed Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.30	0.91	0	0.00	0.00	0	0.30	0.91
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.57	1.71	0	0.57	1.71
Apr	0	0.00	0.00	0	0.61	1.82	0	0.61	1.82
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	2.63	6.41	0	5.23	14.39	0	7.87	20.79
Jul	0	14.07	36.74	0	0.00	0.00	0	14.07	36.74
Aug	0	0.00	0.00	0	1.90	5.05	0	1.90	5.05
Sep	0	0.33	0.99	0	1.19	3.57	0	1.52	4.57
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.51	1.52	0	0.51	1.52
Dec	0	0.00	0.00	0	1.02	3.05	0	1.02	3.05
Annual	0	17.34	45.05	0	11.03	31.12	0	28.36	76.17

Table 69. Lesser Black-backed Gull<sup>2</sup> monthly mean collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.23	0.69	0	0.00	0.00	0	0.23	0.69
Feb	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Mar	0	0.00	0.00	0	0.47	1.42	0	0.47	1.42
Apr	0	0.00	0.00	0	0.53	1.58	0	0.53	1.58
May	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Jun	0	2.39	5.83	0	4.76	13.08	0	7.15	18.90
Jul	0	12.71	33.19	0	0.00	0.00	0	12.71	33.19
Aug	0	0.00	0.00	0	1.67	4.44	0	1.67	4.44
Sep	0	0.28	0.84	0	1.01	3.02	0	1.29	3.87
Oct	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Nov	0	0.00	0.00	0	0.39	1.17	0	0.39	1.17
Dec	0	0.00	0.00	0	0.76	2.28	0	0.76	2.28
Annual	0	15.61	40.54	0	9.58	26.99	0	25.20	67.53

Table 70. Little Gull monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr	0	0.09	0.27	0	0	0	0	0.09	0.27
May	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec	0	0.00	0.00	0	0	0	0	0.00	0.00
Annual	0	0.09	0.27	0	0	0	0	0.09	0.27

Table 71. Sandwich Tern monthly mean collision estimates and 95% confidence intervals, for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Month	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Jan	0	0	0	0	0.00	0.00	0	0.00	0.00
Feb	0	0	0	0	0.00	0.00	0	0.00	0.00
Mar	0	0	0	0	0.00	0.00	0	0.00	0.00
Apr	0	0	0	0	0.00	0.00	0	0.00	0.00
May	0	0	0	0	0.00	0.00	0	0.00	0.00
Jun	0	0	0	0	0.00	0.00	0	0.00	0.00
Jul	0	0	0	0	0.00	0.00	0	0.00	0.00
Aug	0	0	0	0	0.00	0.00	0	0.00	0.00
Sep	0	0	0	0	0.00	0.00	0	0.00	0.00
Oct	0	0	0	0	0.16	0.47	0	0.16	0.47
Nov	0	0	0	0	0.00	0.00	0	0.00	0.00
Dec	0	0	0	0	0.00	0.00	0	0.00	0.00
Annual	0	0	0	0	0.16	0.47	0	0.16	0.47

Table 72. Black-headed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.35	0.70	0	0.35	0.70
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0	0	0	0.31	0.91	0	0.31	0.91

Table 73. Common Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Autumn migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Winter	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0.36	1.07	0	1.23	2.47	0	1.59	3.54



Table 74. Common Tern seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Breeding (full)	0	0.00	0.00	0	0	0	0	0.00	0.00
Autumn migration	0	0.09	0.28	0	0	0	0	0.09	0.28
Winter	0	0.00	0.00	0	0	0	0	0.00	0.00
Non-breeding	0	0.00	0.00	0	0	0	0	0.00	0.00

Table 75. Fulmar seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Breeding (full)	0	0.06	0.14	0.01	0.07	0.15	0.01	0.13	0.29
Autumn migration	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 76. Gannet seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	0.03	0.09	0.00	0.16	0.44	0.00	0.19	0.53
Breeding (full)	0.00	0.52	1.20	0.08	1.11	2.54	0.08	1.64	3.73
Autumn migration	0.07	0.88	1.90	0.17	0.94	1.83	0.24	1.82	3.74
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 77. Gannet2 seasonal summed collision estimates and 95% confidence intervals (calculated using higher value of macro-avoidance rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	0.01	0.04	0.00	0.07	0.19	0.00	0.08	0.23
Breeding (full)	0.00	0.22	0.52	0.03	0.47	1.08	0.03	0.69	1.60
Autumn migration	0.03	0.37	0.82	0.07	0.40	0.78	0.10	0.78	1.60
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 78. Great Black-backed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.40	1.19	0	0.30	0.90	0	0.70	2.10
Breeding (full)	0	0.46	1.38	0	0.38	1.14	0	0.84	2.52
Autumn migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Winter	0	0.39	1.17	0	0.29	0.88	0	0.68	2.05
Non-breeding	0	0.79	2.36	0	0.59	1.78	0	1.38	4.15

Table 79. Great Black-backed Gull2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.30	0.90	0	0	0	0	0.30	0.90
Breeding (full)	0	0.38	1.14	0	0	0	0	0.38	1.14
Autumn migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Winter	0	0.29	0.88	0	0	0	0	0.29	0.88
Non-breeding	0	0.59	1.78	0	0	0	0	0.59	1.78

Table 80. Great Skua seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.09	0.28	0	0.09	0.28
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.00	0.00	0	0.00	0.00
Non-breeding	0	0	0	0	0.00	0.00	0	0.00	0.00

Table 81. Herring Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0.47	0.94	0	0.00	0.00	0	0.47	0.94
Autumn migration	0	0.00	0.00	0	0.69	2.06	0	0.69	2.06
Winter	0	0.35	1.06	0	0.00	0.00	0	0.35	1.06
Non-breeding	0	0.35	1.06	0	0.69	2.06	0	1.04	3.12

Table 82. Herring Gull<sup>2</sup> seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0.42	0.85	0	0.00	0.00	0	0.42	0.85
Autumn migration	0	0.00	0.00	0	0.56	1.67	0	0.56	1.67
Winter	0	0.26	0.79	0	0.00	0.00	0	0.26	0.79
Non-breeding	0	0.26	0.79	0	0.56	1.67	0	0.82	2.46

Table 83. Kittiwake seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	1.60	3.66	0.75	3.47	6.47	0.75	5.09	10.13
Breeding (full)	0.37	3.47	7.30	0.59	7.01	15.84	0.96	10.48	23.12
Autumn migration	0.15	1.90	4.76	1.30	5.43	10.08	1.46	7.33	14.83
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 84. Kittiwake2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0.00	1.26	2.86	0.59	2.73	5.08	0.59	3.98	7.93
Breeding (full)	0.33	3.01	6.34	0.49	6.00	13.61	0.82	9.02	19.96
Autumn migration	0.12	1.48	3.72	0.98	4.12	7.63	1.10	5.59	11.35
Winter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-breeding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 85. Lesser Black-backed Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.57	1.71	0	0.57	1.71
Breeding (full)	0	16.70	43.15	0	7.74	21.26	0	24.45	64.40
Autumn migration	0	0.33	0.99	0	1.19	3.57	0	1.52	4.57
Winter	0	0.30	0.91	0	1.53	4.57	0	1.83	5.48
Non-breeding	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00

Table 86. Lesser Black-backed Gull2 seasonal summed collision estimates and 95% confidence intervals (calculated using lower end of nocturnal activity rate range), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0.47	1.42	0	0.47	1.42
Breeding (full)	0	15.10	39.02	0	6.96	19.10	0	22.06	58.11
Autumn migration	0	0.28	0.84	0	1.01	3.02	0	1.29	3.87
Winter	0	0.23	0.69	0	1.15	3.45	0	1.38	4.14
Non-breeding	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00

Table 87. Little Gull seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Breeding (full)	0	0.09	0.27	0	0	0	0	0.09	0.27
Autumn migration	0	0.00	0.00	0	0	0	0	0.00	0.00
Winter	0	0.00	0.00	0	0	0	0	0.00	0.00
Non-breeding	0	0.00	0.00	0	0	0	0	0.00	0.00

Table 88. Sandwich Tern seasonal summed collision estimates (mean and 95% confidence intervals), for the VE North and South Array Areas and combined. Collisions estimated using turbine parameter set 2.

Season	North			South			Total		
	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.	Lwr 95% c.i.	Mean	Upr 95% c.i.
Spring migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Breeding (full)	0	0	0	0	0.00	0.00	0	0.00	0.00
Autumn migration	0	0	0	0	0.00	0.00	0	0.00	0.00
Winter	0	0	0	0	0.16	0.47	0	0.16	0.47
Non-breeding	0	0	0	0	0.16	0.47	0	0.16	0.47





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