



**SCOTTISHPOWER
RENEWABLES**

East Anglia TWO and East Anglia ONE North Offshore Windfarms

Deadline 4 Offshore Ornithology Cumulative and In-Combination Collision Risk Update

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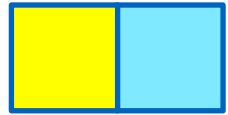
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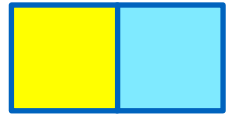
Glossary of Acronyms

AEoI	Adverse Effect on Integrity
AOE	Alde-Ore Estuary
CRM	Collision Risk Model
FFC	Flamborough and Filey Coast
GBBG	Great Black-Backed Gull
HRA	Habitats Regulations Assessment
LBBG	Lesser Black-Backed Gull
ISAA	Information to Support Appropriate Assessment Report
MHWS	Mean High Water Springs
MSL	Mean Sea Level
NE	Natural England
NMC	Non-material change
SNH	Scottish Natural Heritage
SPA	Special Protection Area



1 Introduction

1. This note provides updated collision risk estimates for East Anglia ONE North. These have been calculated following a revision to the site boundary (to achieve a 2km separation from the Outer Thames Estuary SPA) and resulting change to the estimated density of birds in flight. These calculations have only been undertaken for the following species which did not have very low (≤ 3) predicted collision mortalities:
 - Gannet;
 - Kittiwake;
 - Lesser Black-Backed Gull (LBBG), and
 - Great Black-Backed Gull (GBBG).
2. Note that LBBG has been included, even though the original collision risk estimates were very low, due to the potential connectivity with the Alde-Ore Estuary SPA.
3. As well as project alone collisions for East Anglia ONE North, updated cumulative and in-combination collision risk estimates are also provided, taking into account the changes.
4. Given that Hornsea Project Three has now been granted consent, the updated cumulative and in-combination collision risk estimates include Hornsea Project Three with the following caveats:
 - For kittiwake the total is given on the assumption that the compensation provided by Hornsea Project Three fully compensates for those collisions for the Flamborough and Filey Coast SPA and therefore zero collisions are attributed to the SPA from Hornsea Project Three; and
 - As no update for species other than kittiwake were provided by Ørsted, the numbers for other species are taken from Ørsted (2019) and follow Natural England advice with respect to the values to assign to this project provided to the Norfolk Boreas examination (Natural England 2019). It is assumed that these numbers will be over-estimates as they do not take into account mitigation provided in Ørsted's post-examination submissions. Based on the reduction in the kittiwake collision predictions, from 181 to 65-73, the degree of over-estimation for other species is expected to be approximately 60%.
5. Totals are presented with Hornsea Project Four included and excluded.



6. In addition, following comments from Natural England regarding whether the proposed Non-Material Changes (NMC) for East Anglia ONE and East Anglia THREE can be taken into account, the cumulative and in-combination tables have reverted to the currently consented positions for East Anglia ONE and East Anglia THREE. The effect of the NMCs was previously presented in REP1-047. In summary the NMCs would further reduce impacts on the key species, fully offsetting effects upon kittiwake from East Anglia ONE North and East Anglia TWO (the Projects), and partially offsetting effects on gannet and LBBG from the Projects. Notwithstanding Natural England's comments, the Applicants maintain the position that it is appropriate to use these revised figures in the cumulative and in-combination assessments. Indeed, the NMC for East Anglia ONE will simply confirm the as-built position of that operational project. The NMC for East Anglia THREE is already submitted, and whilst not yet granted, the Secretary of State is the decision maker for all of the projects and therefore at the point at which a decision is made, the Secretary of State will be able to take into account the information before him in respect of each project at that point in time.
7. Overall, the updates presented do not alter the conclusions of negligible to minor adverse significance for the EIA and no Adverse Effects on Integrity for the HRA within the assessments submitted (**Chapter 12 Offshore Ornithology** (APP-060) and the **Information to Support Appropriate Assessment Report** (APP-043)).
8. Since this document provides updated cumulative and in-combination totals it is applicable to both the East Anglia ONE North and East Anglia TWO applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA) procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again.



2 Collision modelling update

2.1 Revised site boundary for East Anglia ONE North

9. The site boundary for East Anglia ONE North has been revised on the western side to ensure a 2km separation between the project and the Outer Thames Estuary SPA. This revision slightly changes the baseline survey data used for estimating the density of birds in flight. The data have been reanalysed to obtain revised flight densities which have been used to recalculate the project collision risks. The revised densities are provided in **Table 1** and the revised collision risks in **Table 2**. Values are only presented for those species considered at more than negligible risk of collisions (i.e. this omits species which fly below rotor heights and those for which extremely low collisions were predicted).

Table 1 Monthly densities (birds/km²) of birds in flight estimated for the revised East Anglia ONE North site boundary. Values are the mean and 95% confidence intervals.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	0 (0-0)	0.06 (0-0.16)	0.13 (0.02-0.28)	0.23 (0.07-0.4)	0 (0-0)	0.06 (0-0.16)	0.16 (0.02-0.34)	0.14 (0.06-0.23)	0.04 (0-0.09)	0.18 (0.04-0.36)	0.68 (0.38-0.99)	0.03 (0-0.08)
Kittiwake	0.04 (0-0.11)	0.21 (0.06-0.4)	0.41 (0.2-0.69)	0.89 (0.56-1.23)	0.61 (0.42-0.82)	0.25 (0.07-0.46)	0.09 (0.02-0.18)	0.12 (0.02-0.27)	0.02 (0-0.07)	0.04 (0-0.09)	0.22 (0.07-0.39)	0.28 (0.13-0.46)
Great black-backed gull	0 (0-0)	0.05 (0-0.11)	0.04 (0-0.11)	0.05 (0-0.11)	0 (0-0)	0 (0-0)	0.07 (0-0.16)	0 (0-0)	0 (0-0)	0 (0-0)	0.02 (0-0.05)	0 (0-0)
Lesser black-backed gull	0 (0-0)	0.02 (0-0.07)	0.01 (0-0.04)	0 (0-0)	0 (0-0)	0 (0-0)	0.04 (0-0.16)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)

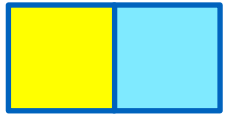
10. The turbine input parameters, including the 2m draught height increase, were unchanged from the previous collision risk update submitted at Deadline 1 (REP1-047) and correspond to the project worst case scenario using a 250m maximum tip height wind turbine. For gannet and kittiwake collision risks were estimated using two different values for nocturnal activity factors, the previous (higher) estimates and revised ones reflecting increased understanding of nocturnal flight activity. For gannet these were respectively, 25% year round and 4% breeding / 8% nonbreeding (as advised in Furness et al. 2018) and for kittiwake these were 50% and 25%, with both values applied all year round.



Table 2 Monthly and annual total collision estimates for the revised East Anglia ONE North site boundary. Values are the mean and 95% confidence intervals, the latter obtained using the upper and lower density values (see Table 1). For gannet and kittiwake two sets of estimates are provided, for different nocturnal activity factors (NAF).

Species	NAF	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Gannet	25	0 (0-0)	0.73 (0-1.91)	1.97 (0.35-4.15)	3.6 (1.09-6.41)	0 (0-0)	1.11 (0-2.94)	2.87 (0.42-6.16)	2.31 (0.99-3.96)	0.57 (0-1.43)	2.6 (0.58-5.09)	8.35 (4.6-12.1)	0.36 (0-0.9)	24.48 (8.04-45.06)
	4 / 8	0 (0-0)	0.57 (0-1.49)	1.7 (0.31-3.57)	3.22 (0.98-5.74)	0 (0-0)	1.04 (0-2.74)	2.67 (0.39-5.72)	2.1 (0.9-3.6)	0.5 (0-1.25)	2.08 (0.47-4.08)	6.24 (3.44-9.05)	0.26 (0-0.64)	20.37 (6.48-37.88)
Kittiwake	50	0.55 (0-1.66)	2.91 (0.83-5.5)	6.7 (3.27-11.12)	14.64 (9.33-20.35)	10.92 (7.53-14.69)	4.4 (1.3-8.21)	1.59 (0.4-3.18)	2.11 (0.34-4.65)	0.35 (0-1.05)	0.62 (0-1.45)	3.19 (0.99-5.6)	3.98 (1.88-6.6)	51.97 (25.85-84.08)
	25	0.42 (0-1.26)	2.3 (0.66-4.35)	5.56 (2.71-9.23)	12.69 (8.08-17.63)	9.78 (6.74-13.16)	4.01 (1.18-7.47)	1.44 (0.36-2.88)	1.86 (0.3-4.1)	0.3 (0-0.89)	0.5 (0-1.17)	2.45 (0.76-4.31)	2.96 (1.4-4.92)	44.27 (22.19-71.36)
Great black-backed gull	50	0 (0-0)	0.91 (0-2.12)	0.86 (0-2.59)	1.09 (0-2.72)	0 (0-0)	0 (0-0)	1.79 (0-4.18)	0 (0-0)	0 (0-0)	0 (0-0)	0.31 (0-0.94)	0 (0-0)	4.96 (0-12.54)
Lesser black-backed gull	50	0 (0-0)	0.34 (0-1.02)	0.24 (0-0.72)	0 (0-0)	0 (0-0)	0 (0-0)	0.9 (0-3.13)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	1.48 (0-4.87)

11. The revised East Anglia ONE North collisions are slightly higher (across species the range is from 0.3% for kittiwake, and 5% for LBBG) than those presented in REP1-047. This is due to the area removed from the analysis containing lower numbers of observations, thus the reduction in area has not been matched by the reduction in the number recorded, with the consequence that the seabird densities are slightly higher. However, the increases in annual total collisions amount to only 0.4 gannets, 0.2 kittiwakes, 0.1 LBBGs and 0.1 GBBGs.
12. This update to the East Anglia ONE North collision risk does not alter the conclusions of negligible to minor adverse significance for the EIA and no Adverse Effects on Integrity for the HRA for the project alone as presented in the assessments submitted (**Chapter 12 Offshore Ornithology** (APP-060) and the **Information to Support Appropriate Assessment Report** (APP-043)).

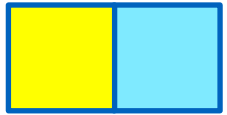


3 Updated cumulative and in-combination collisions

13. The cumulative and in-combination collision totals for gannet, kittiwake, LBBG and GBBG have been revised to include the changes to the East Anglia ONE North collisions outlined above (see **Table 2**). The figures used for other projects are the same as those in REP1-047. The cumulative and in-combination totals are provided in **Appendix 1 Updated Cumulative and In-Combination Collision Risk Tables**.

4 Conclusion

14. Overall, the updates described within this cumulative and in-combination collision risk update do not alter the conclusions of negligible to minor adverse significance for the EIA and no Adverse Effects on Integrity for the HRA within the assessments submitted (**Chapter 12 Offshore Ornithology** (APP-060) and the **Information to Support Appropriate Assessment Report** (APP-043)).
15. Project-alone collision mortalities for both Projects are already small when compared to other projects of a similar scale. These numbers have been further reduced from those submitted with the Applications following the increase in draught height for the Projects.
16. As presented in REP1-047 (but excluded from the totals here as discussed in **paragraph 6** above) project-alone collision mortalities for both Projects are now either fully or partially offset by the proposed NMC applications for East Anglia THREE and East Anglia ONE.



5 References

Furness, R.W. (2015) Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164.
Natural England (2019). Norfolk Boreas Offshore Wind Farm. Appendix 1 to the Relevant Representations of Natural England - Ornithology

Orsted (2019) Hornsea Project Three Offshore Wind Farm. Appendix 28 to Deadline 4 submission -Summary of positions in relation to collision mortality for the SPA populations of gannet and kittiwake.



Appendix 1 Updated Cumulative and In-Combination Collision Risk Tables

Gannet

Table A0.1 Updated gannet cumulative and in-combination collision risk

Tier	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
1	Beatrice Demonstrator	0.6	0	0.9	0.04	0.7	0.05	2.2	0.1
1	Greater Gabbard	14	0	8.8	0.42	4.8	0.3	27.5	0.7
1	Gunfleet Sands	-	-	-	-	-	-	-	-
1	Kentish Flats	1.4	0	0.8	0.04	1.1	0.07	3.3	0.1
1	Kentish Flats Extension	-	-	-	-	-	-	-	-
1	Lincs	2.1	2.1	1.3	0.06	1.7	0.1	5	2.3
1	London Array	2.3	0	1.4	0.07	1.8	0.11	5.5	0.2
1	Lynn and Inner Dowsing	0.2	0.2	0.1	0.01	0.2	0.01	0.5	0.2
1	Scroby Sands	-	-	-	-	-	-	-	-
1	Sheringham Shoal	14.1	14.1	3.5	0.17	0	0	17.6	14.3
1	Teesside	4.9	2.4	1.7	0.08	0	0	6.7	2.5
1	Thanet	1.1	0	0	0	0	0	1.1	0
1	Humber Gateway	1.9	1.9	1.1	0.05	1.5	0.09	4.5	2
1	Westermost Rough	0.2	0.2	0.1	0.01	0.2	0.01	0.5	0.2
1	Hywind	5.6	0	0.8	0.04	0.8	0.05	7.2	0.1
2	Kincardine	3	0	0	0	0	0	3	0



Tier	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
2	Beatrice	37.4	0	48.8	2.34	9.5	0.59	95.7	2.9
2	Dudgeon	22.3	22.3	38.9	1.87	19.1	1.18	80.3	25.3
2	Galloper	18.1	0	30.9	1.48	12.6	0.78	61.6	2.3
2	Race Bank	33.7	33.7	11.7	0.56	4.1	0.25	49.5	34.5
2	Rampion	36.2	0	63.5	3.05	2.1	0.13	101.8	3.2
2	Hornsea Project One	11.5	11.5	32	1.54	22.5	1.4	66	14.4
3	Blyth Demonstration Project	3.5	0	2.1	0.1	2.8	0.17	8.4	0.3
3	Dogger Bank Creyke Beck Projects A and B	81.1	40.6	83.5	4.0	54.4	3.4	219.0	47.9
3	East Anglia ONE	3.4	3.4	131.0	6.3	6.3	0.4	141.0	10.1
3	European Offshore Wind Deployment Centre	4.2	0	5.1	0.25	0.1	0	9.3	0.3
3	Firth of Forth Alpha and Bravo	800.8	0	49.3	2.37	65.8	4.08	915.9	6.4
3	Inch Cape	336.9	0	29.2	1.4	5.2	0.32	371.3	1.7
3	Methil	6	0	0	0	0	0	6	0
3	Moray Firth (EDA)	80.6	0	35.4	1.7	8.9	0.55	124.9	2.3
3	Near na Gaoithe	143	0	47	2.26	23	1.43	213	3.7
3	Dogger Bank Teesside Projects A and B	14.8	7.4	10.1	0.49	10.8	0.67	35.7	8.5



Tier	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
3	Triton Knoll	26.8	26.8	64.1	3.08	30.1	1.87	121	31.7
3	Hornsea Project Two	7	7	14	0.67	6	0.37	27	8
4	East Anglia THREE	6.1	6.1	33.3	1.6	9.6	0.6	49.0	8.3
5	Hornsea Project Three ¹	26	26	12	0.58	11	0.68	49	27.3
5	Norfolk Vanguard	8.2	8.2	18.6	0.89	5.3	0.33	32.1	9.4
6	Moray West	10	0	2	0.1	1	0.06	13	0.2
6	Norfolk Boreas	14.1	14.2	12.7	0.61	3.9	0.24	30.7	15.1
6	East Anglia TWO	10.7	10.7	24.2	1.2	47.7	0.3	39.6	12.2
6	East Anglia ONE North	12.4	12.4	11.0	0.52	1.1	0.07	24.5	13.0
6	<i>Hornsea 4 (PEIR)</i>	43.3	43.3	9.9	0.48	8.1	0.5	61.3	44.3
	Total (all projects)	1849.5	294.5	840.8	40.4	383.8	21.2	3031.2	356.0
	Total (minus Hornsea Project Four)	1806.2	251.2	830.9	40.0	375.7	20.7	2969.9	311.7

¹ Figures for Hornsea Project Three taken from Ørsted (2019) following advice in Natural England (2019). Note these are over-estimates as further mitigation has been applied but no updated collisions have been presented for species other than kittiwake.



Kittiwake

Table A0.2 Updated kittiwake cumulative and in-combination collision risk incorporating revised collision risk numbers for Hornsea Three (i.e. 181 down to 65-73) as submitted in an updated Hornsea Three assessment on the 14th February 2020 (Orsted, 2020)

Ti er	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
1	Beatrice Demonstrator	0.0	0.0	2.1	0.1	1.7	0.1	3.8	0.2
1	Greater Gabbard	1.1	0.0	15.0	0.8	11.4	0.8	27.5	1.6
1	Gunfleet Sands	-	-	-	-	-	-	-	-
1	Kentish Flats	0.0	0.0	0.9	0.1	0.7	0.1	1.6	0.1
1	Kentish Flats Extension	0.0	0.0	0.0	0.0	2.7	0.2	2.7	0.2
1	Lincs	0.7	0.7	1.2	0.1	0.7	0.1	2.6	0.8
1	London Array	1.4	0.0	2.3	0.1	1.8	0.1	5.5	0.3
1	Lynn and Inner Dowsing	-	-	-	-	-	-	-	-
1	Scroby Sands	-	-	-	-	-	-	-	-
1	Sheringham Shoal	-	-	-	-	-	-	-	-
1	Teesside	38.4	0.0	24.0	1.3	2.5	0.2	64.9	1.5
1	Thanet	0.2	0.0	0.5	0.0	0.4	0.0	1.1	0.1
1	Humber Gateway	1.9	1.9	3.2	0.2	1.9	0.1	7.0	2.2
1	Westermost Rough	0.1	0.1	0.2	0.0	0.1	0.0	0.5	0.1
1	Hywind	16.6	0.0	0.9	0.1	0.9	0.1	18.3	0.1
2	Kincardine	22.0	0.0	9.0	0.5	1.0	0.1	32.0	0.6
2	Beatrice	94.7	0.0	10.7	0.6	39.8	2.9	145.2	3.5
2	Dudgeon	-	-	-	-	-	-	-	-
2	Galloper	6.3	0.0	27.8	1.5	31.8	2.3	65.9	3.8



Tier	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
2	Race Bank	1.9	1.9	23.9	1.3	5.6	0.4	31.4	3.6
2	Rampion	54.4	0.0	37.4	2.0	29.7	2.1	121.5	4.2
2	Hornsea Project One	44.0	36.5	55.9	3.0	20.9	1.5	120.8	41.0
3	Blyth Demonstration Project	1.7	0.0	2.3	0.1	1.4	0.1	5.4	0.2
3	Dogger Bank Creyke Beck Projects A and B	288.6	55.8	135.0	7.3	295.4	21.3	719.0	84.3
3	East Anglia ONE	1.8	0	160.4	8.7	46.8	3.4	209.0	12.0
3	European Offshore Wind Deployment Centre	11.8	0.0	5.8	0.3	1.1	0.1	18.7	0.4
3	Firth of Forth Alpha and Bravo	153.1	0.0	313.1	16.9	247.6	17.8	713.8	34.7
3	Inch Cape	13.1	0.0	224.8	12.1	63.5	4.6	301.4	16.7
3	Methil	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0
3	Moray Firth (EDA)	43.6	0.0	2.0	0.1	19.3	1.4	64.9	1.5
3	Near na Gaoithe	32.9	0.0	56.1	3.0	4.4	0.3	93.4	3.4
3	Dogger Bank Teesside Projects A and B	136.9	26.4	90.7	4.9	216.9	15.6	444.5	46.9
3	Triton Knoll	24.6	24.6	139.0	7.5	45.4	3.3	209.0	35.4
3	Hornsea Project Two	16.0	13.3	9.0	0.5	3.0	0.2	28.0	14.0



Tier	Wind farm	Breeding season		Autumn migration		Spring migration		Annual	
		Total	FFC SPA	Total	FFC SPA	Total	FFC SPA	Total	FFC SPA
4	East Anglia THREE	6.1	0	69	3.7	37.6	2.7	112.7	6.4
5	Hornsea Project Three	187.5	-	94.6	-	15.0	-	297.1	0 (65-73)*
5	Norfolk Vanguard	21.8	18.7	16.4	0.9	19.3	1.4	57.5	21.0
6	Moray West	79.0	0.0	24.0	1.3	7.0	0.5	110.0	1.8
6	Norfolk Boreas	13.3	11.4	32.2	1.7	11.9	0.9	57.5	14.0
6	East Anglia TWO	16.8	0	7.9	0.4	17.7	1.3	42.3	1.7
6	East Anglia ONE North	33.7	0	8.1	0.43	10.2	0.25	51.97	0.7
6	Hornsea 4 (PEIR)	153.3	153.3	34.7	1.9	9.9	0.7	197.9	155.9
	Total (all projects)	1519.7	344.6	1640.1	83.4	1227.0	87.0	4386.8	514.9
	Total (minus Hornsea Project Four)	1366.4	191.3	1605.4	81.5	1217.1	86.3	4188.9	359.0

* Note that the contribution from Hornsea Project Three to the FFC SPA total has been removed from the total on the assumption that these collisions will be fully compensated for by the project. The annual total shown in brackets (65-73) was the final apportioned estimate for the mitigated design (Orsted, 2020), however the EIA total of 297 reflects a previous project design with higher collisions as this has also not been updated (and hence this is an over-estimate of the project's contribution to the cumulative total).



Lesser Black-Backed Gull

Table A0.3 Updated lesser black-backed gull cumulative and in-combination collision risk

Tier	Windfarm	Breeding season		Nonbreeding season		Annual	
		Total	AOE SPA	Total	AOE SPA	Total	AOE SPA (nonbreeding season apportioned plus breeding season for wind farms <141km)*
1	Beatrice Demonstrator	-	-	-	-	-	-
1	Greater Gabbard	12.4	8	49.6	2	62	10
1	Gunfleet Sands	1	0.3	0	0	1	0.3
1	Kentish Flats	-	-	-	-	-	-
1	Kentish Flats Extension	0.3	0.1	1.3	0.1	1.6	0.2
1	Lincs	1.7		6.8	0.3	8.5	0.3
1	London Array	-	-	-	-	-	-
1	Lynn and Inner Dowsing	-	-	-	-	-	-
1	Scroby Sands	-	-	-	-	-	-
1	Sheringham Shoal	1.7	0.3	6.6	0.3	8.3	0.6
1	Teesside	0		0	0	0	0
1	Thanet	3.2	1.4	12.8	0.5	16	1.9
1	Humber Gateway	0.3		1.1	0	1.4	0
1	Westermest Rough	0.1		0.3	0	0.4	0
1	Hywind	0		0	0	0	0
2	Kincardine	0		0	0	0	0
2	Beatrice	0		0	0	0	0
2	Dudgeon	7.7	1.1	30.6	1.2	38.3	2.3
2	Galloper	27.8	18	111	4.4	138.8	22.4



Tier	Windfarm	Breeding season		Nonbreeding season		Annual	
		Total	AOE SPA	Total	AOE SPA	Total	AOE SPA (nonbreeding season apportioned plus breeding season for wind farms <141km)*
2	Race Bank	43.2		10.8	0.4	54	0.4
2	Rampion	1.6		6.3	0.3	7.9	0.3
2	Hornsea Project One	4.4		17.4	0.7	21.8	0.7
3	Blyth Demonstration Project	0		0	0	0	0
3	Dogger Bank Creyke Beck Projects A and B	2.6		10.4	0.4	13	0.4
3	East Anglia ONE	5.9	2.2	33.8	1.4	39.7	3.6
3	European Offshore Wind Deployment Centre	0		0	0	0	0
3	Firth of Forth Alpha and Bravo	2.1		8.4	0.3	10.5	0.3
3	Inch Cape	0		0	0	0	0
3	Methil	0.5		0	0	0.5	0
3	Moray Firth (EDA)	0		0	0	0	0
3	Neart na Gaoithe	0.3		1.2	0	1.5	0
3	Dogger Bank Teesside Projects A and B	2.4		9.6	0.4	12	0.4
3	Triton Knoll	7.4		29.6	1.2	37	1.2
3	Hornsea Project Two	2		2	0.1	4	0.1
4	East Anglia THREE	1.8	0.4	8.2	0.3	10	0.7



Tier	Windfarm	Breeding season		Nonbreeding season		Annual	
		Total	AOE SPA	Total	AOE SPA	Total	AOE SPA (nonbreeding season apportioned plus breeding season for wind farms <141km)*
5	Hornsea Project Three	17.3		0	0	17.3	0
5	Norfolk Vanguard	8.4	2.5	3.6	0.1	12	2.6
6	Moray West	0		0	0	0	0
6	Norfolk Boreas	6.2	1.9	8.1	0.2	14.3	2.1
6	East Anglia TWO	4.2	1.6	0.5	0	4.7	1.6
6	East Anglia ONE North	0.9	0.2	0.6	0.1	1.5	0.3
6	<i>Hornsea 4 (PEIR)</i>	1.9		0	0	1.9	0
	Total (all projects)	169.3	38.0	370.6	14.7	539.9	52.7
	Total (minus Hornsea Project Four)	167.4	38.0	370.6	14.7	538.0	52.7

* The apportioning of lesser black-backed gull collisions to the Alde Ore Estuary SPA from breeding colonies in Norfolk and Suffolk uses the connectivity rates estimated in the Table 1 of the **Cumulative and In-Combination Collision Risk Update** submitted at Deadline 1 (REP1-047).



Great black-backed gull

Table A0.4 Great black-backed gull cumulative collision risk

Tier	Windfarm	Breeding season	Nonbreeding season	Annual
1	Beatrice Demonstrator	0	0	0
1	Greater Gabbard	15	60	75
1	Gunfleet Sands	-	-	-
1	Kentish Flats	-	-	-
1	Kentish Flats Extension	0.1	0.2	0.3
1	Lincs	0	0	0
1	London Array	-	-	-
1	Lynn and Inner Dowsing	0	0	0
1	Scroby Sands	-	-	-
1	Sheringham Shoal	0	0	0
1	Teesside	8.7	34.8	43.6
1	Thanet	0.1	0.4	0.5
1	Humber Gateway	1.3	5.1	6.3
1	Westermest Rough	0	0	0.1
1	Hywind	0.3	4.5	4.8
2	Kincardine	0	0	0
2	Beatrice	30.2	120.8	151
2	Dudgeon	0	0	0
2	Galloper	4.5	18	22.5
2	Race Bank	0	0	0
2	Rampion	5.2	20.8	26
2	Hornsea Project One	17.2	68.6	85.8
3	Blyth Demonstration Project	1.3	5.1	6.3
3	Dogger Bank Creyke Beck Projects A and B	5.8	23.3	29.1
3	East Anglia ONE	0	46	46
3	European Offshore Wind Deployment Centre	0.6	2.4	3



Tier	Windfarm	Breeding season	Nonbreeding season	Annual
3	Firth of Forth Alpha and Bravo	13.4	53.4	66.8
3	Inch Cape	0	36.8	36.8
3	Methil	0.8	0.8	1.6
3	Moray Firth (EDA)	9.5	25.5	35
3	Nearr na Gaoithe	0.9	3.6	4.5
3	Dogger Bank Teesside Projects A and B	6.4	25.5	31.9
3	Triton Knoll	24.4	97.6	122
3	Hornsea Project Two	3	20	23
4	East Anglia THREE	4.1	30.3	34.4
5	Hornsea Project Three	19.4	46.6	66
5	Norfolk Vanguard	4.5	21.5	26
6	Moray West	4	5	9
6	Norfolk Boreas	6.9	28.7	35.6
6	East Anglia TWO	3.5	3.4	6.9
6	East Anglia ONE North	3.7	1.2	5.0
6	<i>Hornsea 4 (PEIR)</i>	3	13.6	13.6
	Total (all projects)	198.3	827.6	1023.0
	Total (Hornsea Project Four)	195.3	814.0	1009.4