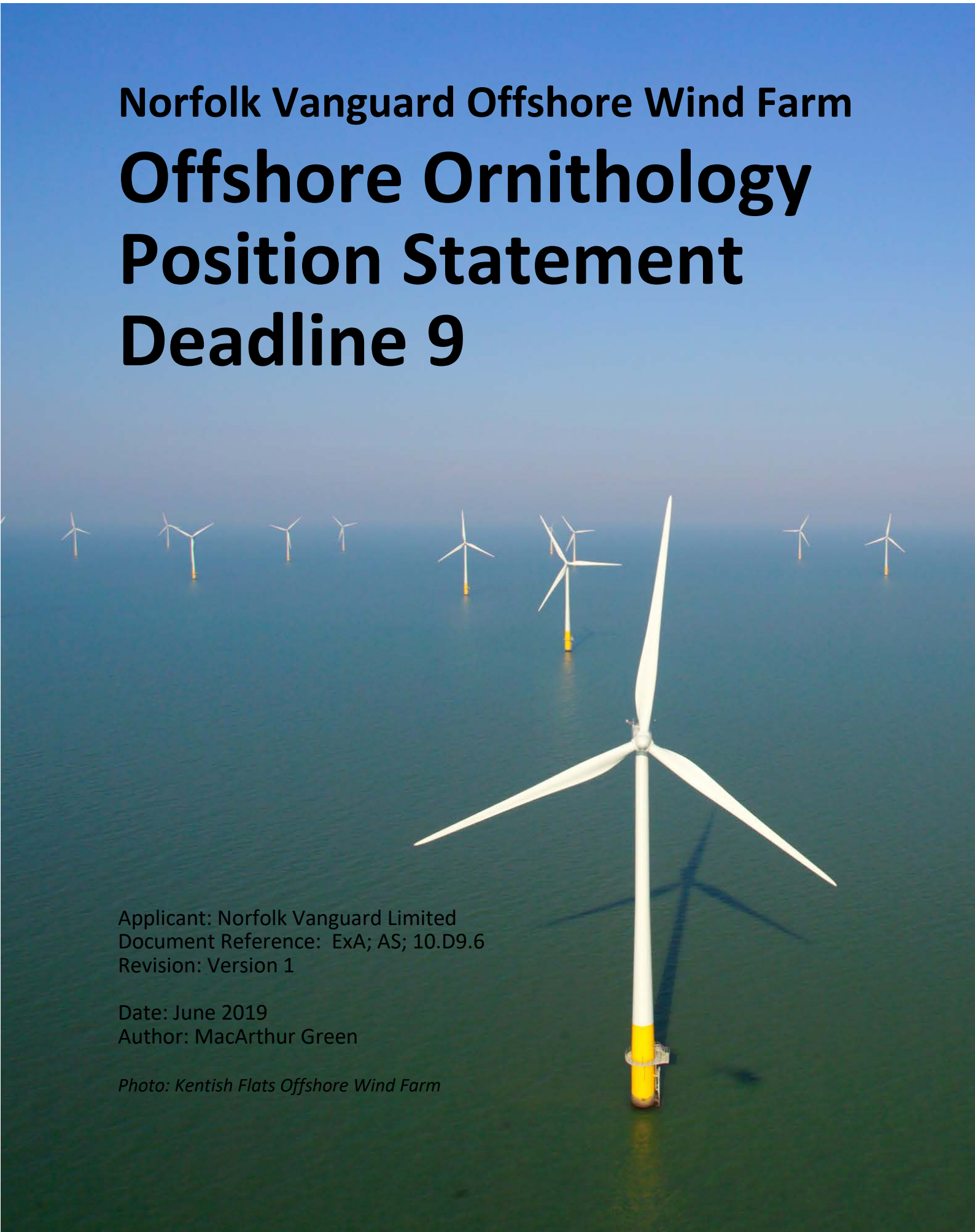


# Norfolk Vanguard Offshore Wind Farm Offshore Ornithology Position Statement Deadline 9

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Author: MacArthur Green

*Photo: Kentish Flats Offshore Wind Farm*



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## Executive Summary

This note presents the Applicant's position and conclusions at Deadline 9 (6<sup>th</sup> June 2019) regarding offshore ornithology matters and provides consideration of the comments and conclusions provided by Natural England at Deadline 8 (REP8-104) and the Royal Society for the Protection of Birds (RSPB) at Deadline 8 (REP8-109). Over the course of the Examination, at the request of both Natural England and the RSPB to explore options to reduce impacts, the Applicant has made three significant steps to reduce the predicted collision risk impacts associated with Norfolk Vanguard (NV) (the project):

- Removal of the 9MW turbine from the design envelope, thereby reducing the maximum number of turbines by 10% and the predicted collision estimates by a similar amount;
- Revised layout of turbines across the NV East and NV West sites, which further reduced the average collision risk by 34%; and
- A commitment to a 5m draught height increase from 22m to 27m above Mean High Water Springs which added a further reduction of 41% in the average collision risk.

Taken together, these revisions reduced the average collision risk for the project by 65% compared with the design submitted in the original application.

Both Natural England and the RSPB have welcomed these mitigations and acknowledge the significant reductions in collision impacts they generate. Natural England confirmed at Deadline 8 (REP8-104) that they do not consider there to be any significant impacts due to collisions from the project alone at the Environmental Impact Assessment (EIA) scale, or any adverse effects on the integrity of any Special Protection Area (SPA). However, Natural England does consider there to be significant cumulative impacts and adverse effects on integrity of the Flamborough and Filey Coast SPA for kittiwake and gannet and of the Alde-Ore Estuary SPA for lesser black-backed gull due to collision risks for the project in-combination with other plans and projects. The basis for Natural England's conclusions has been reviewed and this note presents the Applicant's conclusions on these aspects.

Taking into account the large degree of precaution in Natural England's approach to impact assessment (as detailed in ExA;AS;D.8.8), the Applicant is able to reach robust conclusions for all species, based on precautionary assessments, that it is possible to rule out significant cumulative impacts and adverse effects on integrity of the relevant SPAs as a result of collision risks for the project in-combination with other plans and projects. Furthermore, Norfolk Vanguard does not make a meaningful contribution to the total in-combination collision risk estimated for any of these species.

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## Glossary

AEol	Adverse Effect on Integrity
AONs	Apparently Occupied Nests
EIA	Environmental Impact Assessment
ES	Environmental Statement
ExA	Examining Authority
FFC	Flamborough and Filey Coast
FHBC	Flamborough Head and Bempton Cliffs
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
MHWS	Mean High Water Springs
NE	Natural England
NV	Norfolk Vanguard
pSPA	Potential Special Protection Area
PVA	Population Viability Analysis
RSPB	Royal Society for the Protection of Birds
SPA	Special Protection Area

## 1. INTRODUCTION

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1. This note sets out the Applicant's position at Deadline 9 (6<sup>th</sup> June 2019) regarding offshore ornithology matters in relation to the comments provided by Natural England at Deadline 8 (REP8-104) and the Royal Society for the Protection of Birds (RSPB) at Deadline 8 (REP8-109). The Applicant notes in particular that Natural England welcomes that an increased draught height (from 22m to 27m from Mean High Water Springs (MHWS)) has now been committed to by the Applicant following the previous refinement of the "worst case scenario" at Deadline 6.5 (AS-043). These design mitigations have reduced the average collision risk for the Project by 65% compared with the submitted wind farm design.
2. The focus of this note is on the collision risk assessment and the comments provided by Natural England at Deadline 8 (REP8-104). An updated assessment of displacement risk for guillemot, razorbill and puffin was submitted by the Applicant at Deadline 8 (ExA;AS;10.D8.8) to address Natural England's comments received at Deadline 7 (REP7-075). The conclusions of the updated displacement assessment remain the same as those submitted in the previous assessment (ExA;AS;10.D6.17): there will be no significant impacts due to displacement for these species due to Norfolk Vanguard alone or cumulatively with other wind farms and there will be no Adverse Effects on Integrity (AEoI) of the Flamborough and Filey Coast Special Protection Area (SPA) either alone or in-combination with other plans and projects.

### 1.1. Response to key points in Natural England Deadline 8 submission

#### 1.1.1. Collision risks – Norfolk Vanguard alone (EIA and HRA)

3. The Applicant welcomes the agreement from Natural England on project alone collision impacts, presented by Natural England in Table 1 of their comments on offshore ornithology (REP8-104). This states that there will be no significant impacts (from an Environmental Impact Assessment (EIA) point of view) or Adverse Effects on Integrity (AEoI) (from a Habitats Regulations Assessment (HRA) point of view) for any species. Furthermore, the Applicant notes that Natural England has reached these conclusions on the basis of additive precaution in several components of the assessment (further discussion on the sources of precaution and these have been compounded is provided in the Applicant's Deadline 8 submission, ExA;AS;10.D8.8).

#### 1.1.2. Collision risks – cumulative (EIA)

4. The Applicant welcomes Natural England's conclusions on cumulative collision risk for herring gull and lesser black-backed gull, for which no significant impacts are predicted (it should be noted that while Table 1 of REP8-104 states there will be a

moderate adverse impact on herring gull, the detailed section in paragraph 2.6.3 states this will in fact be minor adverse).

5. The Applicant does not agree that there will be significant cumulative impacts due to collisions for gannet, kittiwake and great black-backed gull as concluded by Natural England in REP8-104. The Applicant also disagrees with Natural England's position on cumulative collision risk for little gull, for which Natural England is unable to reach a conclusion due to missing sites in the cumulative assessment" (paragraph 2.8, REP8-104). The basis for the Applicant's disagreement with Natural England on these conclusions is summarised below.
6. Furthermore, the Applicant also considers there to be significant additive over-precaution in Natural England's approach to estimating the impact of cumulative collisions (as detailed in ExA;AS;10.D8.8). This includes consideration for built vs. consented wind farm designs (legal arguments notwithstanding, the collision risks at almost all wind farms are over-estimated by up to 50% due to this aspect alone); use of over estimates for input parameters for which there is robust evidence that lower values should be used (e.g. nocturnal activity and avoidance rates) and for which robust, reliable and simple methods for adjusting current and previous collision estimates are available (these have been discussed informally with Natural England); and giving no consideration to older Population Viability Analysis (PVA) outputs which still provide valid guidance on impact consequences.
7. Although there are uncertainties associated with the estimation of impact magnitudes for seabirds, for which a degree of precaution is warranted, the Applicant does not therefore agree with Natural England's approach of combining worst case assumptions without giving proper consideration to the unrealistic results thus obtained (see ExA;AS;10.D8.8 for further discussions on the extreme improbability of combined worst case scenarios).

#### 1.1.2.1. Gannet

8. Irrespective of the combination of precaution in Natural England's approach (i.e. even for the most precautionary scenario), Norfolk Vanguard contributes less than 2.5% of the cumulative collision risk for gannet (66 from a total of 2,723). In addition, Natural England considers that gannet may be at risk of both collisions and displacement, assigning further precaution to this species' assessment. However, the potential for an impact due to displacement at Norfolk Vanguard is considered to be much lower than that assumed by Natural England, not least because the birds were primarily recorded on the Norfolk Vanguard site during migration periods. The likelihood that birds which are undertaking seasonal journeys of around 4,000km to and from West Africa would experience a displacement effect from a comparatively very short detour around a wind farm site is considered to be extremely small.

9. Therefore, the Applicant considers that the total cumulative combined collision and displacement estimate for gannet will not give rise to a significant impact and that Norfolk Vanguard does not make a meaningful contribution to this total.

#### 1.1.2.2. Kittiwake

10. The Applicant acknowledges that kittiwake populations have declined over the last few decades. However, this is unrelated to impacts from wind farms, and instead reflects reductions in prey availability due to over-fishing and climate change. In addition to the over precaution in the collision predictions applied by Natural England (see ExA;AS;10.D8.8), the Applicant considers that offshore wind farms have the potential to address both declining fish stocks (through the provision of fish refugia around turbines) and also to reduce carbon emissions. The Applicant feels that Natural England's submission does not fully present the context for kittiwake population trends, with the consequent implication that this is connected solely to offshore wind farms.
11. Natural England has not considered that the previous kittiwake PVA outputs (produced for East Anglia THREE) provide useful guidance because the simulation period was 25 years (Norfolk Vanguard has a 30 year projected life-span) and the outputs from the models were not presented in the formats currently requested (as the work predated the latest guidance). However, estimates of the change in population growth rate were presented as part of this assessment, and this is the equivalent of the counterfactual of population growth rate (one of the currently requested PVA outputs). Furthermore, changes in growth rate will be virtually identical when measured over 25 years and when measured over 30 years and therefore the addition of five years to the simulations would make an insignificant difference. It should also be noted that the same PVA methods were used for great black-backed gull at East Anglia THREE, but for this species Natural England referred to this model in their assessment review (paragraph 2.7.4 of REP8-104).
12. The outputs in the previous kittiwake PVA report indicate that the kittiwake population growth rate at an additional mortality of 4,000 (the closest estimate to the cumulative total presented in REP08-104) will be reduced by 0.4% (density independent) or 0.1% (density dependent). These reductions are very small and it is therefore appropriate to conclude that, even applying Natural England's overly precautionary approach, the consequences for the North Sea kittiwake population will be extremely small.
13. Irrespective of the combination of precaution in Natural England's approach, Norfolk Vanguard contributes a maximum of 3.0% of the cumulative collision risk for kittiwake (115 from a total of 4,144). The Applicant therefore considers that the total



cumulative collision estimate for kittiwake will not give rise to a significant impact, and that Norfolk Vanguard does not make a meaningful contribution to this total.

#### 1.1.2.3. Great black-backed gull

14. Natural England has made reference to the PVA for great black-backed gull produced for East Anglia THREE, whilst noting that it was produced following the previous guidance and run for simulated periods of 25 years. However, despite the presentation in the PVA report of estimates of the change in population growth rate only the counterfactuals of population size have been used. At an additional mortality of 900 (the closest estimate to the cumulative total presented in REP08-104), the reduction in growth rate was estimated to be between 1.1% (density independent) and 0.2% (density dependent). These reductions are very small and it is therefore appropriate to conclude that, even applying Natural England's overly precautionary approach, the consequences for the North Sea great black-backed gull population will be extremely small.
15. Irrespective of the combination of precaution in Natural England's approach, Norfolk Vanguard contributes a maximum of 5.0% of the cumulative collision risk for great black-backed gull. The Applicant therefore considers that the total cumulative collision estimate for great black-backed gull will not give rise to a significant impact, and that Norfolk Vanguard does not make a meaningful contribution to this total.

#### 1.1.2.4. Little gull

16. Natural England has stated that they cannot reach a conclusion on cumulative collision risk for little gull because the cumulative assessment undertaken by the Applicant (ExA;AS;10.D7.21) omits collision estimates for the Dudgeon, East Anglia ONE and East Anglia THREE wind farms, which Natural England considered should be included. However, there are no collision estimates for this species for any of these projects available: this species was not assessed as at collision risk at either East Anglia ONE or East Anglia THREE and the assessment for Dudgeon referred to by Natural England in REP8-104 is not publicly available (this was confirmed on a call between the Applicant and Natural England on 3<sup>rd</sup> June 2019 and is also agreed in the Applicant's Statement of Common Ground with Natural England, Rep1-SOCG-13.1, Rev3). On the basis of available evidence therefore, the cumulative little gull collision risk assessment is considered to be complete and the conclusion presented by the Applicant in ExA; AS; 10.D7.21 of no significant cumulative impact remains valid and that Norfolk Vanguard does not make a meaningful contribution to this total.

### 1.1.3. Collision risks – Norfolk Vanguard in-combination (HRA)

#### 1.1.3.1. Gannet

17. The Applicant welcomes Natural England's conclusions on in-combination collision risk for gannet from the Flamborough and Filey Coast Special Protection Area, for which no AEol is predicted with the exclusion of the Hornsea Project Three. It is also worth noting that it is the Applicant's understanding that the conclusion of an AEol for gannet with the inclusion of Hornsea Project Three is not because the addition of estimates for Hornsea Project Three are considered to raise the cumulative total above a threshold, but rather that Natural England is unable to agree what the impact magnitude is for Hornsea Project Three, with the consequence that any cumulative total which subsequently includes that project automatically becomes an unknown number (Natural England's position on this was confirmed during a call with the Applicant on the 3<sup>rd</sup> June 2019).
18. Furthermore, the comments made above on precaution all apply to this assessment (e.g. built vs. consented designs, over-estimated nocturnal activity rates and avoidance rates), with additional precautions introduced through the use of the full breeding season (despite clear patterns of abundance indicating that migration movements predominate) and assumptions about breeding season connectivity.
19. Thus, overall, the probability of an in-combination AEol is considered to be extremely low, the Applicant's conclusion in ExA;AS;10.D7.21 remains valid and Norfolk Vanguard does not make a meaningful contribution to the in-combination total.

#### 1.1.3.2. Kittiwake

20. The Applicant has given considerable attention to the potential for kittiwake connectivity between Norfolk Vanguard and the Flamborough and Filey Coast SPA and the available evidence. Even with the application of the precautionary methods advised by Natural England, the population growth rate for kittiwake as a result of Norfolk Vanguard has only been predicted to be reduced by 0.6%, which compared with the trend of around a 7% growth over the last 20 years, is clearly a very minor effect. Natural England states that the conservation objective for this population is to 'restore the population to 83,700 pairs', however this population estimate was given considerable attention by the leading authority on kittiwake in Britain (John Coulson) who concluded that this was mistakenly identified as pairs when it in fact referred to individuals. This view was also endorsed in the Recommendation Report for the Hornsea Project One Wind Farm<sup>1</sup>:

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<sup>1</sup> <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010033/EN010033-002060-Hornsea%20Project%20One%20Recommendation%20Report.pdf>

*A particular issue was raised in the examination about the size of the kittiwake population, and trends in that population, at the FHBC SPA and the FFC pSPA. NE noted that the kittiwake population had apparently decreased from 83,700 pairs in 1987 to 44,520 pairs (2008-11 mean used to classify the SPA/pSPA), thereby indicating that the Flamborough Head kittiwake population had undergone a significant decline [REP-304].*

*The applicant strongly disputed this, drawing on the work of John Coulson (2011) The Kittiwake30. In his book Dr Coulson casts major doubt over some of the numbers of pairs reported for the Flamborough colony. The reported number of pairs fluctuated from 30,800 (1969), to 83,000 (1979), to 83,700 (1986) to 42, 659 (2000); the latter figure suggesting a dramatic mortality or emigration. Dr Coulson concludes -*

*'After careful consideration and search for more information, I now believe that the 1979 figure supplied was the actual numbers of adult kittiwakes at these colonies (i.e. double the number of pairs), and there were never anything like 83,000 pairs there at any time - thus reducing the numbers to about 41,500 pairs in 1979 and 1986. These numbers are much more consistent with the overall trends in kittiwake numbers in north-east England and would not require the huge increase, followed by a major decrease, neither of which is supported by an independent observer who recorded little change over this period' [REP-327].*

*In a subsequent email, following RSPB and NE disputing this analysis, and the discovery by JNCC of the long-lost 1979 counts, Dr Coulson commented further -*

*'The information I have as now still casts doubt on the accuracy of the 1979 numbers. In my opinion it is up to JNCC to make the case by supplying evidence that would convince me to withdraw my severe doubts of the large increase. So far JNCC have not done so, and I suggest that until they do so, considerable doubt must exist that 83,000 pairs of kittiwakes ever nested at Flamborough in or about 1979' [REP-380].*

*JNCC subsequently responded that -*

*'JNCC have examined all kittiwake count evidence available, including original paper survey forms and report, from the 1987 breeding seabird survey within the area now defined as FHBC SPA. We consider the count of 85,395 apparently occupied nests (AONs) to be correct' [REP-442].*

*It is obvious that two very knowledgeable scientific authorities take totally divergent views on this issue. Nonetheless the ExA comes to the conclusion on the basis of the evidence and arguments put before it that Dr Coulson's thesis is more persuasive to a significant degree. At the end of the examination the ExA therefore had very considerable doubt as to the accuracy of apparent fluctuations in the numbers of*

*kittiwakes at the Flamborough colony, and felt unable to give any significant weight to them.*

21. There is considerable supporting evidence for this conclusion, including analysis of seabird colonies<sup>2</sup> which have strongly supported the view that the current Flamborough and Filey SPA population is very likely to be around as large as any kittiwake population can sustain due to resource constraints (e.g. competition for food).
22. As a consequence of the above considerations it appears that the stated population objective for kittiwake (to restore the population to 83,700 pairs) is derived from erroneous records and that the target population size should in fact be between 40,000 and 50,000. On this basis the goal should be to prevent significant reduction, not to double the size, and the current population status should be categorised as favourable (the 2017 count estimate was 51,000 pairs).
23. Thus, overall the probability of an in-combination AEoI is considered to be extremely low, the Applicant's conclusion in ExA;AS;10.D7.21 remains valid and Norfolk Vanguard does not make a meaningful contribution to the in-combination total.

#### 1.1.3.3. Lesser black-backed gull

24. The Applicant has given considerable attention to the populations of lesser black-backed gull with the potential for connectivity to Norfolk Vanguard and has undertaken evidence based assessment wherever possible. This work has drawn on a wide range of data sources and presented a detailed and robust basis for estimating impacts. The Applicant is therefore disappointed that Natural England's response requests that assessment be based on a range of percentages for which no justification is provided, except noting that these are precautionary.
25. Natural England states that there is insufficient evidence for the presence and operation of density dependence in seabirds for it to be reliably included in PVA models. One of the key differences between density independent and density dependent models is that the former permits unlimited growth (if a density independent model has a growth rate greater than 1 then the population will grow exponentially) while the latter will maintain the population around a stable level (i.e. the population is stable in the long term).
26. However, when considering the density independent outputs from the PVA Natural England states that, with respect to the outputs, '*if it is assumed that the population is stable*' and then go on to assume the reduction in size applies to this output. Natural England therefore applies results obtained without density dependence in a

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<sup>2</sup> Jovani, R., Lascelles, B., Garamszegi, L., Mavor, R., Thaxter, CB., and Oro, D. (2016). Colony size and foraging range in seabirds. *Oikos*, 125:968-974

manner which implies density dependence is operating in order to maintain a stable population. This approach represents another example of over precaution: the reductions in population size or growth rate are typically larger (i.e. more precautionary) from a density independent model, and these larger reductions have then been applied to an apparently stable population. However, consideration of impacts in relation to a stable population can be simply achieved through reviewing the density dependent outputs.

27. For lesser black-backed gull the reduction in the density independent population growth rate at an additional mortality of 40 (the closest estimate to the cumulative total presented in REP08-104) is 1%, while the equivalent density dependent prediction is 0.2% (i.e. five times less).
28. For the above reasons, the probability of an in-combination AEoI is considered to be extremely low, the Applicant's conclusion in ExA;AS;10.D7.21 remains valid and Norfolk Vanguard does not make a meaningful contribution to this total.

#### 1.1.3.4. Little gull

29. Natural England has stated that they cannot reach a conclusion on in-combination collision risk for little gull because the assessment presented by the Applicant omits collision estimates for Dudgeon, East Anglia ONE and East Anglia THREE wind farms which Natural England considered should be included. However, as explained above, there are no collision estimates for any of these projects available: this species was not assessed as at collision risk at either East Anglia ONE or East Anglia THREE and the assessment for Dudgeon, referred to by Natural England in REP8-104, is not publicly available (confirmed by Natural England). On the basis of available evidence therefore, the in-combination little gull collision risk assessment is considered to be complete, the conclusion presented by the Applicant in ExA; AS; 10.D7.21 of no AEoI remains valid and Norfolk Vanguard does not make a meaningful contribution to this total.

### 1.2. Response to key points in RSPB's Deadline 8 submission

30. The Applicant welcomes the RSPB's agreement that the project design revisions 'results in a significant reduction in collision risk to species of concern' and that 'the project alone will not result in adverse effects on the integrity of the Flamborough and Filey Coast SPA or the Alde-Ore Estuary SPA.' (REP8-109).
31. However, the RSPB does not agree that there will be no AEoI for gannet, kittiwake and lesser black-backed gull for in-combination collision estimates. Although the RSPB has not presented the same level of detail in their response as that in Natural England's (REP8-104) it is assumed that similar arguments will apply. On this basis, the above considerations for each species are also considered to be appropriate with respect to the RSPB's position on these matters.

### 1.3. Conclusions on collision risk, displacement and over precaution

32. In summary, following the review of Natural England's and the RSPB's Deadline 8 submissions (REP8-104 and REP8-109) the Applicant's position remains that:
- Norfolk Vanguard Offshore Wind Farm will not have significant impacts on any species' population as a result of collisions or displacement at the project alone (EIA);
  - Norfolk Vanguard, cumulatively with other wind farms, will not have significant impacts on any species' population, and furthermore Norfolk Vanguard does not make meaningful contributions to the total estimated impacts;
  - Norfolk Vanguard will not have an adverse effect on the integrity of any SPA populations as a result of collisions, displacement or the combination of both at the project alone (HRA); and
  - Norfolk Vanguard will not have an adverse effect on the integrity of any SPA populations as a result of collisions, displacement or the combination of both at the project in-combination with other plans and projects (HRA) and furthermore Norfolk Vanguard does not make a meaningful contribution to the total estimated impacts.
33. The Applicant also remains concerned at the large degree of precaution applied in the assessment by Natural England and by the RSPB. While individual worst case outcomes may be justified, these should be presented as a balance of both upper and lower confidence intervals rather than simply assuming only the worst case. There should also be much greater acknowledgement of the extremely low probability that combined worst case outcomes will occur. It is this aspect in particular (that adding precaution at multiple steps in the assessment process results in highly over precautionary conclusions) that generates the greatest concerns for the Applicant, especially when considered with respect to the high level of evidence based assessments presented by the Applicant. It is informative to consider that the likelihood of obtaining two worst case outcomes at the same time (e.g. two upper 95% confidence interval estimates) is only 0.06% and any additional worst case assumptions reduce this likelihood still further (the probability of three worst case outcomes is 0.001%, or in other words 99.998% of the time this result would not be expected). Further discussion on these points has been presented in ExA;AS;10.D8.8.