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NORFOLK VANGUARD OFFSHORE WIND FARM

Planning Inspectorate Reference: EN010079

Secretary of State Additional Information Request

**Natural England Alde-Ore Estuary (AOE) SPA PVA and in-
combination assessments**

19th November 2021

ANNEX 7 - Natural England Alde-Ore Estuary (AOE) SPA PVA and in-combination assessments, submitted by the Norfolk Boreas Applicant in response to the Secretary of State letter dated 22 September 2021

1) General Comments

1. Whilst this updated Alde-Ore Estuary (AOE) SPA PVA and in-combination assessment was submitted by the Norfolk Boreas Applicant in response to the Secretary of State (SoS) letter dated 22 September 2021 (MacArthur Green 2021), it is also highly relevant to Norfolk Vanguard. Our advice on this matter is relevant to both Norfolk Boreas and Norfolk Vanguard.
2. We note that the update submitted by Norfolk Boreas in MacArthur Green (2021) was in request from the SoS to undertake an updated AOE SPA PVA based on updated in-combination collision totals for lesser black-backed gull (LBBG) based on the revised avoidance rates recommended in Cook (2021). However, since the publication of Cook (2021) issues have come to light with some of the data included to generate the recommended avoidance rates and hence Natural England has therefore concluded that it is not appropriate to use the ARs recommended in the Cook (2021) report. This being the case, Natural England advice reverts to that previously provided throughout the Norfolk Vanguard and Norfolk Boreas examinations i.e. that collision risk modelling (CRM) should use the ARs previously advised by SNCBs i.e. those presented in SNCBs (2014) – in the case of LBBGs this is 99.5% avoidance rate. Further details of the update on Natural England's advice regarding avoidance rates can be found in Annex 6 to this response.
3. The updated AOE PVA and in-combination assessments submitted by the Norfolk Boreas Applicant does contain updated PVA metrics for in-combination collision total for using the 99.5% avoidance rate for LBBG in SNCBs (2014). Therefore it is relevant for consideration in our advice on AOE SPA LBBG in-combination collision mortality for both Norfolk Boreas and Norfolk Vanguard.
4. We note that in the Boreas AOE SPA update document (MacArthur Green 2021), the Applicant raises the same comments on the method for applying density dependence in the online version of the PVA Tool as the Vanguard Applicant raises in their updated Flamborough and Filey Coast (FFC) SPA PVA and in-combination assessments in

Royal Haskoning DHV (2021). Our detailed comments on this are set out in Annex 6 to this response.

5. We welcome that both the counterfactuals of population size (CPS) and counterfactuals of growth rate (CGR) metrics from the updated AOE SPA PVAs are presented in MacArthur Green (2021). We note our advice provided at Deadline 4 during the Norfolk Boreas examination regarding use of both counterfactuals and around use of density dependent vs density independent PVA models^{1,2}. The counterfactual metrics are relative measures, the use of the counterfactual metrics does make the metrics less sensitive to mis-specifying density dependence or density independence etc. Without having good evidence to support what form and strength of density dependence to add to a model there is no way of knowing whether the predictions from a density dependent model are robust or accurate, which is why Natural England advise use of the density independent models, or at least inclusion of a density independent option.
6. We also welcome that the outputs of the updated AEO SPA LBBG PVA in MacArthur Green (2021) have been presented as the whole population, which reflects the advice that Natural England gave during the Norfolk Boreas examination in our Deadline 4 response¹.
7. We note that a starting population size for the AOE SPA LBBG colony of 3,022 breeding adults has been used in the updated PVA in MacArthur Green (2021). No information is provided as to the source of this figure. However, we assume that it is based on the count data from 2021 of 1,511 Apparently Occupied Nests (AON) (i.e. 3,022 adults) at Havergate presented by RSPB in Table 2 of Annex 2 of their response dated 20th August 2021³.

¹ Natural England (2020) Norfolk Boreas Offshore Wind Farm Deadline 4: Updated Ornithology Advice – Natural England’s comments in relation to the Norfolk Boreas updated offshore ornithological assessment, submitted at Deadline 2 [REP2-035]. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-001629-DL4%20-%20Natural%20England%20-%20Updated%20Ornithology%20Advice.pdf>

² Natural England (2020) Norfolk Boreas Offshore Wind Farm: Natural England’s Written Summary of Oral Representations made at Issue Specific Hearing 4 on offshore effects including the Draft Development Consent Order. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-001630-DL4%20-%20Natural%20England%20-%20Written%20Representation%20of%20Oral%20Case.pdf>

³ RSPB (2021) Norfolk Boreas Offshore Wind Farm: Written submission for the Royal Society for the Protection of Birds Annex 2 Alde-Ore Estuary SPA, 20 August 2021. Available from: [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-002857-Norfolk%20Boreas_RSPB%20response%20to%20BEIS%20consultation_August%202021_Annex%202_Alde-Ore%20Estuary%20SPA%20\(FINAL\).pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010087/EN010087-002857-Norfolk%20Boreas_RSPB%20response%20to%20BEIS%20consultation_August%202021_Annex%202_Alde-Ore%20Estuary%20SPA%20(FINAL).pdf)

8. In the updated PVA and in-combination assessment (MacArthur Green 2021), the PVA models have been based on the precise impact levels from the in-combination assessments (these have been run to an impact level 0.1 of a bird). As we have noted in Annex 6 to this response, it would have been beneficial to also present some tables with the counterfactuals for a wider range of figures e.g. for the LBBG in-combination collision assessment to present outputs against impacts of 45, 50 and 50 birds, rather than 48.2 and 51.4 only as has been done currently.

**2) Alde-Ore Estuary (AOE) SPA: Lesser black-backed gull – impacts from Norfolk Vanguard/Norfolk Boreas in-combination with other plans and projects:
Operational collision risk**

9. Table A1.1 of MacArthur Green (2021) presents the Applicant's updated in-combination total for all projects at a 99.5% avoidance rate (which remains SNCB advice at present for LBBGs) of 48.2 LBBGs from AOE SPA. This predicted in-combination collision impact equates to more than 1% of baseline mortality of the AOE SPA colony.
10. The Conservation Objective for the LBBG population of the Alde-Ore Estuary SPA is to restore the size of the breeding population to a level which is above 14,074 whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
11. Based on the updated PVA metrics in MacArthur Green (2021), if the additional mortality from the offshore wind farms is 48.2 per annum then the population of the AOE SPA after 30 years will be 43.4% (CPS 0.5662 from Table 4.2 of MacArthur Green 2021) lower than it would have been in the absence of the additional mortality. The population growth rate would be reduced by 1.8% (CGR 0.9818 from Table 4.2 of MacArthur Green 2021). If it is assumed that the population is stable, this would mean that the population would be 43.4% lower than the current population size. This would be counter to the restore conservation objective for this feature of the site.
12. It is not known what the growth rate of the colony will be over the next 30 years and this should be considered when judging the significance of predicted impacts against the conservation objectives for the feature. As the AOE SPA LBBG population is at best currently stable we have considered this as well as a range of 1-5% growth rates per annum for if the colony may potentially grow in the future, although at present there

seems considerable uncertainty regarding whether this can be achieved (as we considered in our previous advice on this matter at Vanguard and Boreas).

13. If we assume a stable population or a 1% per annum growth rate then 48.2 additional mortalities per annum would result in the population declining below its current level, let alone be able to reach the target population of the conservation objective. If we assume a 2% per annum growth rate then 48.2 additional mortalities per annum would result in the population being approximately 3,000 birds lower than without the additional mortality after 30 years, and it would take over an additional 600 years to reach the target population compared to the no windfarm mortality scenario.
14. If the LBBG population were to grow at a rate of 3% per annum over the next 30 years, then additional mortality of 48.2 per annum would result in the population being approximately 4,000 birds lower than without the additional mortality after 30 years and it would take over an additional 60 years to reach the target population compared to the no windfarm mortality scenario.
15. There is no evidence to suggest that the future population trend will be significantly different from the current trend, which is most likely to be stable, in which case there is a risk that the population could decline due to predicted mortality levels. Furthermore, given that the population is likely to be hindered from restoration to target levels even when more optimistic assumptions about the population trend of the colony are made, Natural England also considers that it is not possible to rule out an adverse effect on integrity (AEol) even if the population starts to show modest growth.
16. We note that following the SoS letter dated 22 September 2021 where the request was made for the Boreas Applicant to provide updated CRM and PVA for LBBG, the Boreas Applicant sought clarification on the list of projects to include, and was informed that:

'the in-combination assessment to include Hornsea Project 3, Norfolk Vanguard and Norfolk Boreas. For the avoidance of doubt, the in-combination assessment should not include East Anglia ONE North, East Anglia Two, Hornsea Project 4, or the Dudgeon and Sheringham extension projects.'
17. However, judging from Table A1.1 of the updated document (MacArthur Green 2021) the in-combination totals presented and hence that PVAs have been run have included Hornsea Project 3 and Boreas in the totals, but appear to have excluded Norfolk Vanguard (contribution 2.7 collisions). Therefore, the in-combination total impact using a

99.5% avoidance rate for all projects that has been modelled (i.e. 48.2) is too low – Natural England advises that the in-combination total including Hornsea Project 3, Norfolk Vanguard and Norfolk Boreas (as requested by the SoS) should actually be 51 (rounded to whole birds) LBBGs from the AOE SPA.

18. We also consider that as the Examinations of the East Anglia One North and East Anglia Two projects have concluded and Recommendation Reports will have been issued, these projects warrant inclusion in the in-combination assessment as there is potential connectivity with the AOE SPA LBBG colony, and these projects do contribute collisions to the in-combination total. Based on the latest figures presented by East Anglia One North and East Anglia Two in their Deadline 13 submission⁴, East Anglia One North contributes 0.3 LBBG collisions to the AOE SPA and East Anglia Two contributes 1.6 collisions. This brings the in-combination AOE SPA LBBG collision total to 53 (rounded to whole birds) collisions per annum for all projects up to and including Hornsea 3, Norfolk Vanguard, Norfolk Boreas, East Anglia One North and East Anglia Two.
19. As we are unable to rule out an AEoI on the LBBG feature of the AOE SPA based on an in-combination total of 48.2 as presented by the Norfolk Boreas Applicant in MacArthur Green (2021), our advice will remain unchanged when additional collisions are included in the total from Norfolk Vanguard, East Anglia One North and East Anglia Two.
20. **Therefore, as this feature has a restore conservation objective, and because there are indications that the population might even decline from current levels, Natural England’s advice remains that it is not possible to rule out an AEoI of the LBBG feature of the Alde-Ore Estuary SPA for from in-combination collision impacts with other plans and projects.**

⁴ MacArthur Green & Royal Haskoning DHV (2021) East Anglia Two and East Anglia One North Offshore Wind Farms Deadline 13: Offshore Ornithology Cumulative and In-Combination Collision Risk and Displacement Update. Available from: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-005586-ExA.AS-12.D13.V1%20EA1N&EA2%20D13%20Offshore%20Ornithology%20Cumulative%20and%20In-Combination%20Collision%20Risk%20and%20Displacement%20Update.pdf>

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SNCBs (JNCC, NE, NIEA, NRW, SNH) (2014). *Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review*. Available from: [REDACTED]

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