Written Submission
for
The Royal Society for the Protection of Birds

Response to the Secretary of State's Consultations

22 April 2020

Planning Act 2008 (as amended)

In the matters of:

Application by Ørsted Hornsea Project Three (UK) Ltd for an Order Granting Development Consent for the

Hornsea Project Three Offshore Wind Farm

Planning Inspectorate Ref: EN010080
Registration Identification Ref: 20010702

AND

Application by Norfolk Vanguard Limited for an Order Granting Development Consent for the

Norfolk Vanguard Offshore Wind Farm

Planning Inspectorate Ref: EN010079
Registration Identification Ref: 20012785

rspb giving nature a home

Contents

1. Summary

Main conclusions

The RSPB is grateful for the opportunity to make submissions in response to the Secretary of State for Business, Energy and Industrial Strategy (BEIS) request for comments in relation to the consultation 1 submissions on the Hornsea 3 and Norfolk Vanguard offshore wind farm schemes. This response sets out the RSPB's combined response to the BEIS consultations on those offshore wind farm schemes. Below we set out a summary of the RSPB's key conclusions and recommendations set out in detail elsewhere in this submission.

Adverse effect on integrity

Section 4 sets out the RSPB's detailed comments and conclusions on potential adverse effects on integrity in respect of the Flamborough and Filey Coast SPA (FFC SPA) and the Alde-Ore Estuary SPA and their species. As set out in section 2 below, for the purposes of this response, we have confined our comments to breeding kittiwakes from the FFC SPA and the seabird assemblage feature to which it contributes and breeding LBBG from the Alde-Ore Estuary SPA. In this respect, our conclusions for each scheme are as follows.

Hornsea Three

We conclude that it is not possible to exclude the risk of adverse effects on site integrity on the FFC SPA, with reference to the following SPA features:

- **Kittiwake:** alone and in-combination
- **Seabird assemblage:** alone and in-combination

The RSPB continues to consider that significant issues with the information provided by the Hornsea Three Applicant mean that limited confidence can be attached to that Applicant's conclusions on the likely impacts of the Hornsea Three scheme. If we were able to have similar confidence in that additional information as we have had with the information provided by the end of the Norfolk Vanguard examination, it is likely we would reach similar conclusions for Hornsea Three as those we reached for the Norfolk Vanguard scheme. Therefore, our more tentative conclusions on Hornsea Three should not be taken as the RSPB stating categorically that Hornsea Three is less damaging than Norfolk Vanguard, since they are based on less robust information and, therefore, we are unable to form clearer conclusions.

Norfolk Vanguard

We conclude that adverse effects on site integrity on the FFC SPA exists, with reference to the following SPA features:

- **Kittiwake:** in-combination (adverse effect on site integrity exists, irrespective of whether Hornsea Three figures are included)
- **Seabird assemblage:** in-combination (not possible to rule out adverse effect on site integrity due to collision risk and displacement. This is based on combined impacts of: kittiwake, gannet, guillemot and razorbill).

We also conclude that adverse effects on site integrity on the Alde-Ore Estuary SPA exist, with reference to the following SPA feature:

- **Lesser black-back gull:** in-combination.

Alternative solutions and imperative reasons of overriding public interest

Section 5 sets out the RSPB's detailed comments on the information presented by Hornsea Three and Norfolk Vanguard to justify their arguments that each scheme can demonstrate there are (i) no alternative solutions and (ii) imperative reasons of overriding public interest (IROPI) in favour of their respective schemes. The RSPB disagrees with these conclusions.

The RSPB has set out the appropriate way to approach the legal tests that will need to be considered in the event that the Secretary of State agrees it is not possible to conclude that there will be no adverse effects on the integrity of European sites and their habitats and species on the basis of the best available scientific information. Having also considered in detail the main submissions from both Applicants on alternative solutions and IROPI in light of, in our view, the correct application of the legal tests, we do not believe that either have made a sufficiently robust case for there being no alternative solutions to their proposals nor that there is IROPI.

Therefore, the RSPB considers that the Secretary of State has not been provided with the necessary information to reach a conclusion on either part of the requirements and currently cannot consent the proposals on the basis of no alternative solutions and IROPI (the necessary compensatory measures are discussed below).

Compensatory measures

Section 6 sets out the RSPB's detailed comments on how compensation measures need to be considered and our views on the measures proposed by Hornsea Three and Norfolk Vanguard. For the detailed reasons set out in section 6, the RSPB considers that neither Hornsea Three or Norfolk Vanguard have put forward compensation measures that can be considered to have a reasonable guarantee of success as required by both Defra and European Commission guidance. In summary, the RSPB's conclusions are:

Flamborough and Filey Coast SPA: breeding kittiwakes (and the seabird assemblage feature)

The RSPB welcomes the work carried out by both Hornsea Three and Norfolk Vanguard to identify potential compensation measures to address the predicted in-combination adverse effects on breeding kittiwakes from the FFC SPA. For reasons each has set out, devising a compensation measure for breeding kittiwakes with a "reasonable guarantee of success" is highly problematic.

At this point in time, it is the RSPB's conclusion that neither Hornsea Three or Norfolk Vanguard have established that their preferred option meets the necessary standards and evidence base to be considered a compensation measure that has a "reasonable guarantee of success". Each has its difficulties which, in summary, are:

- **Hornsea Three**: the available evidence suggests predation by mammals is rare and there is little or no empirical evidence that kittiwakes are at significant risk from invasive mammalian predation. Further evidence reviews and research is required to demonstrate kittiwakes would benefit from invasive mammalian predator eradication.
- **Norfolk Vanguard**: there is little or no evidence to demonstrate that creation of a de nouveau artificial nesting structure will successfully attract and sustain a population of breeding kittiwakes. In addition, the RSPB is concerned that the proposal to locate the structure in the southern North Sea within its offshore Order limits exposes any birds that do colonise the structure to two known negative pressures: poor food availability and collision risk, thereby undermining the measure from the outset. Any proposal to over-compensate to address these issues should only be considered on the basis of a fuller understanding of the implications of each pressure on the likely outcome, including appropriate population modelling.

Alde-Ore Estuary SPA: breeding lesser black-backed gulls

As with kittiwakes, the RSPB welcomes the work carried out by Norfolk Vanguard to identify potential compensation measures to address the predicted in-combination adverse effects on breeding LBBGs from the Alde-Ore Estuary SPA. In principle. we support the proposal to carry out a

structured review to identify potential compensation measures that would have a "reasonable guarantee of success".

However, at this point in time, it is the RSPB's conclusion that Norfolk Vanguard has not established that its preferred option meets the necessary standards and evidence base to be considered a compensation measure that has a "reasonable guarantee of success". In summary, Norfolk Vanguard's preferred option to create a predator fenced area within the Alde-Ore Estuary:

- would not be additional to measures already necessary to restore the LBBG population of the SPA to favourable status;
- There is scientific uncertainty as to the effectiveness of the measures. Further research is required to test the efficacy of the most likely measures;
- It would be necessary to show how any compensatory measures within the SPA are genuinely additional to site management.

Overall conclusions on compensation measures

Based on the RSPB's detailed comments, the RSPB's overall conclusions are that neither Hornsea Three nor Norfolk Vanguard have presented compensation measures that:

- Have a reasonable guarantee of success based on the best scientific knowledge;
- Would be secured (legally, financially and technically) in advance of consent being granted;
- Would ensure the overall coherence of the Natura 2000 network was protected.

The RSPB considers that any formal proposal for compensation measures must be secured prior to DCO consent being granted.

Recommendations to BEIS

Given the conclusions above, it is the RSPB's position that the Secretary of State should not consider granting consent for either Hornsea Three or Norfolk Vanguard until he is in possession of the necessary detailed information to make a properly informed decision.

With this in mind, we make the following recommendations as to the next steps to enable the Secretary of State to be provided with the necessary information to make the properly informed decision required.

Adverse effect on integrity

The RSPB recommends that a standardised, generic approach to impact assessment, as agreed by the statutory nature conservation bodies, is adhered to and the results of any novel assessment method presented alongside those of the generic approach.

Compensation measures

We **recommend** that the Secretary of State pauses any decision on whether or not to consent the schemes and establishes an Expert Working Group to report to the Secretary of State in advance of any consent being granted. Its purpose would be to advise the Secretary of State on whether there are any viable and sufficiently proven compensation measures with a reasonable guarantee of success and the steps necessary to secure such measures. This would ensure the Secretary of State could take an informed decision on whether consent could be granted on the basis that compensation measures with a reasonable guarantee of success had been secured.

The Expert Working Group should be charged with carrying out a detailed review of all possible options for compensatory measures including the appropriate legal and financial guarantees, as well as details on implementation, management and monitoring and the need for alternative, additional measures be provided should initial measures fail (the feedback loop mechanism).

Among other things, in relation to each species it should review the best available science in order to:

- agree a method for converting annual collision risks in to appropriate compensation objectives. This will ensure the compensation requirements for any scheme are calculated fairly;
- Agree the length of time the compensation measure should be secured for, using appropriate population modelling (based on the combination of the lifetime of the development plus the time it will take the affected seabird population to recover from the impacts);
- carry out a comprehensive review of the potential measures to meet those objectives and identify those that have the best potential to succeed;
- identify any critical gaps in knowledge on the likely success of those measures and to assess the level of uncertainty and risk associated with each;
- determine what work is necessary to address those gaps in order to identify those measures that could have a reasonable guarantee of success and over what timescales that work would need to be carried out before consent could be granted; and

- determine whether / where food supply is sufficient that additional safe nesting areas (provided either through artificial structures or predator eradication) might feasibly benefit the kittiwake population.

In respect of LBBG, we recommend that detailed consideration be given to off-site compensatory measures using the search hierarchy set out in the EC guidance. Based on the RSPB's knowledge of LBBGs, this may require consideration of locations outside the immediate location of the Alde-Ore Estuary.

2. Introduction

Scope of response

1. The RSPB is grateful for the opportunity to make submissions in response to the Secretary of State for BEIS request for comments in relation to the consultation 1 submissions on the Hornsea 3 and Norfolk Vanguard offshore wind farm schemes. This response sets out the RSPB's combined response to the BEIS consultations on those offshore wind farm schemes.

2. The RSPB has chosen to submit a single response to the separate BEIS consultations as the primary concerns in relation to breeding seabirds relate to the in-combination effects of the schemes on breeding seabird SPAs. Therefore, we thought it would be most helpful to BEIS to address both schemes together, drawing on the submissions from both developers. Our response also draws on our Consultation 1 submissions for both schemes and cross-refers where necessary and therefore should be read in conjunction with those responses. Our comments should be taken to apply to both schemes except where specified.

"Disclaimer"

3. As set out in our Consultation 1 submissions on both schemes, our conclusions on potential adverse effects on integrity apply to several seabird species from the Flamborough and Filey Coast SPA (FFC SPA), as well as breeding lesser black-backed gull (LBBG) from the Alde-Ore Estuary SPA. Those conclusions remain. However, for the purposes of this response, we have confined our comments to breeding kittiwakes from the FFC SPA and the seabird assemblage feature to which it contributes and breeding LBBG from the Alde-Ore Estuary SPA. Many of our conclusions and recommendations in respect of the derogation tests will apply equally to the other features of the FFC SPA i.e. gannet, guillemot and razorbill.

4. Due to the impacts of the Covid-19 public health emergency, it has not been possible for the RSPB to review every document submitted by the developers of each scheme (e.g. those relating to Special Areas of Conservation or Marine Conservation Zones). Any lack of comment on submitted documents should not be taken as agreeing or disagreeing with their content.

3. RSPB position on adverse effect on integrity at the end of Consultation 1

Nature conservation importance of seabirds affected - summary

5. This section summarises the nature conservation importance of two of the seabird species affected by the Hornsea 3 and/or Norfolk Vanguard schemes (and as mentioned above in the case of kittiwake, the seabird breeding assemblage it is part of). Reference is made to the relevant site conservation objectives and supplementary advice.

Note on site management measures

6. It is important to note that both species (kittiwake and LBBG) have undergone significant declines at their respective SPAs. As we set out below, this has resulted in Natural England setting "restore" objectives for each species and requiring the necessary site management interventions. The RSPB supports these site conservation objectives. In this context, where site management measures are required to restore an SPA feature to favourable conservation status, the RSPB agrees with Hornsea 3[1] and Norfolk Vanguard[2] that compensation measures should not be used to address issues that are causing designated features to be in an unfavourable condition. This is in line with the European Commission's 2018 guidance.[3] We return to this in our review of the compensation measures proposed (see section 6).

The Flamborough and Filey Coast SPA: kittiwakes and the seabird assemblage

7. The FFC SPA supports one of the most important UK colonies of breeding seabirds and the most important in England. This includes its population of kittiwakes.

8. As set out in Natural England's Supplementary Advice and in the RSPB's Consultation 1 submissions, the FFC SPA kittiwake colony has undergone a major decline in recent years[4]:

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[1] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 2: Compensatory Measures.* Para 3.12.
[2] See paragraph 41 in: Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 1 – Flamborough and Filey Coast Special Protection Area – In Principle Compensation Measures for Kittiwake* and Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 2: Alde-Ore Estuary SPA – In Principle Compensation Measures for lesser black-backed gull*.
[3] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final.
[4] Supplementary Advice on the Conservation Objectives for the FFC SPA, Natural England, 13 September 2019: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006101&SiteName=&SiteNameDisplay=Flamborough+and+Filey+Coast+SPA&countyCode=&responsiblePerson=

despite this it remains one of the most important colonies in the UK. It is currently in unfavourable conservation status. This in turn has had a negative knock-on impact on the SPA breeding seabird assemblage feature.

9. The RSPB notes that Norfolk Vanguard[5] claim that the 1987 kittiwake population estimate that the SPA conservation objectives seek to restore to, is incorrect. The RSPB disputes this, and as such our position is in alignment with Natural England and JNCC, both of whom based their position of an extensive review of the evidence, including original paper survey forms and reports, for the Hornsea Project 1 examination in 2014 and for the drafting of the conservation objectives for the FFC SPA in 2016. In particular these reviews highlighted that two of the claims against the veracity of the population counts; that they were in fact counts of birds rather than nests (and therefore pairs) and that there was an over-reliance on land-based counts, were contrary to the evidence available. Furthermore, regardless of this historical decline and this difference in position between the statutory agencies and Norfolk Vanguard current productivity is low (0.55 fledglings per pair[6]), below the 0.8 suggested need for a kittiwake colony population to be maintained (Coulson, 2017[7])

10. Natural England's Supplementary Advice[8] summarises the current understanding of the reasons behind the decline in kittiwakes at the FFC SPA. The key reasons identified are reduction of prey availability (sandeels) in response to climate change and fishing activity, viz:

> For Breeding population abundance attribute "…*The current figures clearly indicate a major decline in numbers since this time. At present, it is unclear why this decline has occurred, although evidence suggests that reductions in the availability of the kittiwakes preferred prey species (sandeels) has also reduced kittiwake productivity (Frederiksen et al., 2004). This reduction in prey availability is thought potentially to be a response to climate change, as this decline in kittiwake population has been seen in other parts of the North Sea region, coinciding with a rise in sea surface temperatures (Wanless et al., 2007)."*

[5] For example, see Norfolk Vanguard *Ornithology Position Statement*. Para 34
[6] Lloyd, I., Aitken, D., Wildi, J and O'Hara, D. (2019) *Flamborough and Filey Coast SPA Seabird Monitoring Programme. 2019 Report.* RSPB Report.
[7] Coulson, J. C. (2017). Productivity of the Black-legged Kittiwake Rissa tridactyla required to maintain numbers. *Bird Study*, *64*(1), 84-89.
[8] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9006101&SiteName=flamb&SiteNameDisplay=Flamborough+and+Filey+Coast+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=4

11. And for Supporting habitat, food availability attribute

> *"…Evidence for the wider North Sea indicates that availability of sandeels is likely to be a factor in kittiwake decline. (Frederiksen et al., 2004) (Wanless et al., 2007). Recent evidence suggests that the decline in sandeel in the area around Flamborough may be attributable to fishing activity."*

12. Both Hornsea 3 and Norfolk Vanguard agree with the analysis that the main pressures on breeding kittiwakes in the North Sea relate to climate change impacts on prey availability, and fishing activity in the Southern North Sea (e.g. paragraph 59 of Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 1 – Flamborough and Filey Coast Special Protection Area – In Principle Compensation Measures for Kittiwake*).

13. Natural England also identify additional downward pressures on populations such as those at FFC SPA from offshore wind farms (see Table 3 in the RSPB's Norfolk Vanguard submission dated 27 February 2020 and Natural England's FFC SPA site specific supplementary advice on "Connectivity with supporting habitats").

Kittiwake productivity declines

14. As set out in Figure 1 of each of the RSPB's Consultation 1 submissions, breeding productivity at FFC SPA has declined rapidly in recent years: between 2013-17 it did not exceed the 2010-2014 average of 0.8 fledged chicks per Apparently Occupied Nest cited by Norfolk Vanguard[9] and was regularly below that level. As a long-lived species, such lowering in productivity will take some time before it becomes apparent in population numbers. However, if this trend continues it will have severe long-term impacts on the population growth. This reinforces the need for site management interventions to achieve productivity levels that will enable the population to be restored.

15. As we set out in our Consultation 1 responses, given the context of continued declines in the UK kittiwake population since the early 1990s (including at FFC SPA) and the effect of anthropogenic impacts on adult survival and productivity, the RSPB considers that offshore windfarm mortality could add significantly to the multiple stressors affecting this population and reduce the likelihood of population recovery.

[9] Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 1 – Flamborough and Filey Coast Special Protection Area – In Principle Compensation Measures for Kittiwake*

16. This is relevant to whether or not the cumulative effect of the offshore wind farm schemes will act to undermine the site conservation objectives for this species.

Site Conservation Objectives and draft Supplementary Advice

17. The RSPB considers the attributes and targets set out in Natural England Supplementary Advice are particularly relevant to BEIS's consideration of the Hornsea 3 and Norfolk Vanguard schemes. As noted above, due to the major decline in the kittiwake population of the FFC SPA, Natural England has set a restore objective for this feature. This is reflected in its draft Supplementary advice:

    - To restore the size of the breeding population at a level which is above 83,070 breeding pairs, while avoiding deterioration from its current level as indicated by the latest mean peak count of equivalent;
    - the need to:
        - restore safe passage of birds moving between their nesting and feeding areas;
        - to restrict the frequency, duration and/or intensity of disturbance to roosting, nesting, foraging, feeding, moulting and/or loafing birds so they are not significantly disturbed;
        - to maintain the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle; and
        - restore the distribution, abundance and availability of key food and prey items.

18. The RSPB considers these attributes and targets are directly relevant to BEIS's consideration of whether the SPA's conservation objective to restore site ecological integrity can be met meaning the achievement of favourable conservation status for its kittiwake feature including its contribution to the assemblage.

19. As the Supplementary Advice explains "*The listed attributes are considered to be those which best describe the site's ecological integrity and which if safeguarded will enable achievement of the Conservation Objectives*….[and that this information should be used] *along with the conservation objectives and case-specific advice issued by Natural England when developing, proposing or assessing an activity, plan or project that may affect the site.*

    Any proposals or operations which may affect the site or its features should be designed so they do not adversely affect any of the attributes in the [Supplementary Advice on conservation objectives] *or achievement of the conservation objectives*."

The Alde-Ore Estuary SPA: lesser black-backed gulls

20. As set out on pages 15-17 of our Norfolk Vanguard submission dated 27 February 2020, the LBBG SPA population has undergone a severe decline, such that in 2019 there were only 1,717 breeding pairs recorded in the SPA. The 5-year mean (2015-2019) was 1,842 pairs: this represents an approximate 87% decline from the favourable level of 14,070 pairs set by Natural England. Therefore, the LBBG feature of the Alde-Ore Estuary is clearly in unfavourable conservation status. It is for this reason Natural England has set a restore objective for the LBBG population (see below).

21. Historically, the main colony was located at National Trust's Lantern Marshes, Orfordness. At present, the main colony is located at the RSPB's Havergate Island reserve, where it is now one of the management priorities.

Site Conservation Objectives and Supplementary Advice

22. The RSPB considers the attributes and targets set out in Natural England's Supplementary Advice are particularly relevant to BEIS's consideration of the Norfolk Vanguard scheme. As noted above, due to the major decline in the LBBG population of the Alde-Ore Estuary SPA, Natural England has set a restore objective for this feature. This is reflected in its draft Supplementary advice:

- To restore the size of the breeding population level to a level which is above 14,074 pairs whilst avoiding deterioration from its current level indicated by the latest mean peak count or equivalent;
- the need to
  - maintain safe passage of birds moving between their nesting and feeding areas;
  - reduce the frequency, duration and/or intensity of disturbance to roosting, nesting, foraging, feeding, moulting and/or loafing birds so they are not significantly disturbed;
  - maintain the extent, distribution and availability of suitable breeding habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle; and
  - maintain the distribution, abundance and availability of key food and prey items.

23. The RSPB considers these attributes and targets are directly relevant to BEIS's consideration of whether the SPA's conservation objective to restore site integrity can be met and the SPA achieve favourable conservation status for its LBBG feature.

24. As mentioned above, the Supplementary Advice for this site also clearly states[10] that consideration of both the attributes and the conservations must be had and proposals should be designed to not adversely affect any of the attributes nor the achievement of the conservation objectives.

Reasons for decline in the Alde-Ore Estuary SPA LBBG population

25. Understanding the reasons behind the decline of the SPA's LBBG population is critical to putting in place the necessary site management measures to restore it to favourable status.

26. A study of gull productivity on the Alde-Ore Estuary by the RSPB in 2010 and 2011 identified the most likely factors contributing to poor productivity within the Alde-Ore Estuary SPA by comparing productivity at Orfordness and Havergate. This study has been referenced in the RSPB's submissions to various offshore wind farm examinations including Galloper and East Anglia One.[11] It is now available as an RSPB report.[12] The factors identified were:

- Fox predation;
- Flooding; and
- Habitat quality – dense vegetation.

27. The RSPB agrees with Natural England's view summarised by the Examining Authority for the Galloper Wind Farm application that "*it is not clear what actually caused the LBBG breeding population to collapse in the first place, and there is a lack of hard data on the effectiveness of site management measures*" (see para (xii) of the Examining Authority's Report on the Implications for European Sites, submitted to the NID Examination of the GWF application in November 2012). It is for this reason that at the time of the Galloper and East Anglia One

[10] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009112&SiteName=alde-ore&SiteNameDisplay=Alde-Ore+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=8

[11] See RSPB Response to Written Representations and Statements of Common Ground at Deadline 2 for the East Anglia One offshore wind farm examination, dated 23 August 2013. Para 4.30.

[12] Davis, S., Sharps, E., Brown, A., Lock, L., Wilson, L.J. and Bolton, M. 2018. *Breeding success of sympatric Herring Gulls Larus argentatus and Lesser Black-backed Gulls Larus fuscus breeding at two adjacent colonies with contrasting population trends.* RSPB Research Report 62. RSPB Centre for Conservation Science, RSPB, The Lodge, Sandy, Bedfordshire, SG19 2DL

examinations, the RSPB set out that further experimental research was essential to assess which management measure(s) would be most effective in increasing breeding productivity of breeding LBBGs at the Alde-Ore Estuary SPA to restore the colony to favourable status.[13] This remains the case.

28. The need to address these site management issues is now set out in Natural England's Site Improvement Plan for the Alde-Ore Estuary Natura 2000 Sites.[14] The Plan identified the following priority issues and measures with regard to LBBG:

Table 1: Priority/Issues and Measures relating to breeding LBBG in Natural England's Site Improvement Plan for the Alde-Ore Estuary Natura 2000 sites

Priority and Issue	Measure
Hydrological changes (pressure)	Seek alternative habitat provision or habitat enhancement opportunities
Public access/disturbance (pressure)	Reduce bird disturbance
Inappropriate pest control (pressure)	Ensure adequate protection of nesting birds from predators
Changes in species distributions (threat)	Understand population dynamics and enable boundary flexibility/better wider habitat provision

29. Therefore, there is a clear requirement for appropriate site management measures to be put in place to help restore the SPA's LBBG population. Due to all SPAs being underpinned by SSSIs and Natural England having the requisite SSSI powers available to it under the Wildlife and Countryside Act 1981 (as amended) it can work with relevant owners and occupiers to put those measures in place.

The RSPB's position on adverse effect on integrity

30. In Table 2 below, we summarise the RSPB's overall conclusions (at the end of Consultation 1) on potential adverse effects on site integrity arising from the Hornsea 3 and Norfolk Vanguard schemes.

[13] See for example: RSPB responses to the Examiners' Second Written Questions for the Galloper Offshore Wind Farm examination, dated 24 September 2012, Question 20.36.
[14] Natural England (2014) *Site Improvement Plan Alde-Ore Estuaries.*

Table 2: The RSPB's position on impacts on the Flamborough and Filey Coast SPA and Alde-Ore Estuary SPA at the end of Consultation 1

Feature	SPA	Hornsea 3	Norfolk Vanguard
Kittiwake	FFC	**Alone:** Cannot exclude the risk of an adverse effect on site integrity **In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (irrespective of whether Hornsea Project Three figures are included)
Gannet	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)
Guillemot	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)
Razorbill	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)
Assemblage	FFC	**Alone:** Cannot exclude the risk of an adverse effect on site integrity **In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Not possible to rule out adverse effect on site integrity due to collision risk and displacement (based on combined impacts of: kittiwake, gannet, guillemot and razorbill).
Lesser black-backed gull	Alde-Ore Estuary	Not applicable	**In-combination:** Adverse effect on site integrity exists.

31. In respect of the RSPB's conclusions on Hornsea Three, we refer to section 7 of our 14 February 2020 submission. This considered the additional information provided by Hornsea Three after the end of the examination and which formed part of the Secretary of State's Consultation 1. We make the following points:

- The RSPB's conclusions in relation to Hornsea Three do include our review of additional ornithological information provided by the Applicant and which formed part of the Secretary of State's Consultation 1 (dated 27 September 2019) to which the RSPB responded on 14 February 2020. However, despite this further information our views on the likely impacts of the scheme on the Flamborough and Filey Coast SPA remain unaltered;
- In addition, the RSPB continues to consider that significant issues with the information provided by the Hornsea Three Applicant (despite this addition al information) mean that limited confidence can be attached to that Applicant's conclusions on the likely impacts of the Hornsea Three scheme;

- If we were able to have confidence in the additional information as we have had with the information provided by the end of the Norfolk Vanguard examination, it is likely we would reach similar conclusions for Hornsea Three as those we reached for the Norfolk Vanguard scheme (also summarised in the table above);
- Therefore, our more tentative conclusions on Hornsea Three should not be taken as the RSPB stating Hornsea Three is less damaging than Norfolk Vanguard, since they are based on less robust information and, therefore, we are unable to form clearer conclusions.

32. For this reason, we reiterate our recommendation that these HRA impact assessments are carried out to a common, agreed standard, thereby creating a level playing field between applications.

Uncertainty and the Precautionary Approach

33. The Precautionary Principle exists for situations where scientific data does not exist or is incomplete and therefore it is not possible to complete a full evaluation of the possible risks a plan, project or activity may cause to the environment, including possible danger to humans, animal or plant health, or to the environment in general. The European Commission's Precautionary Principle guidance[15] states that it should apply when a phenomenon, product or process may have a dangerous effect, identified by a scientific and objective evaluation, if this evaluation does not allow the risk to be determined with sufficient certainty. As such the degree of precaution applied to an evaluation, or assessment, can be seen to be directly proportional to the extent of scientific uncertainty inherent in that assessment. As the guidance goes on to recommend:

> "*The implementation of an approach based on the precautionary principle should start with a scientific evaluation, as complete as possible, and where possible, identifying at each stage the degree of scientific uncertainty***."**

34. As there can be "*almost as many definitions of uncertainty as there are treatments of the subject*",[16] following Masden *et al* (2015)[17], here we define it as a lack of knowledge, or incomplete information about a particular subject. Masden *et al.,* identified a hierarchy of

[15] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52000DC0001&from=EN
[16] Argote, L. (1982). Input Uncertainty and Organizational Coordination in Hospital Emergency Units. *Administrative Science Quarterly, 27*(3), 420-434. doi:10.2307/2392320
[17] Masden, E. A., McCluskie, A., Owen, E., & Langston, R. H. (2015). Renewable energy developments in an uncertain world: the case of offshore wind and birds in the UK. *Marine Policy*, *51*, 169-172.

uncertainty in offshore wind farm assessment. This included not only the uncertainty arising from scientific knowledge, but uncertainty arising more strategically from the process of assessment itself such as uncertainty within language and decision-making. Included within this process uncertainty can be considered anything that increases the difficulty in reaching firm and robust conclusions.

35. It is argued by both Hornsea Three and Norfolk Vanguard that while there is considerable uncertainty in the science underpinning their assessments, their approaches have been overly precautionary.

36. For example, for Hornsea Three the Applicant has argued[18]

> "*Impact assessments are sequential in nature (i.e. baseline, identification of maximum project envelope, assumed worst case scenarios, effect estimation, assessment of population consequences). There is a tendency to add precaution at each stage. For example, focussing attention on the upper limits of each component. This ensures assessments over, rather than under, estimate impacts*."

37. However, this precaution is a necessary consequence of the inherent uncertainty, and despite this both Hornsea Three and Norfolk Vanguard bring in increased uncertainty by making the decision-making process increasingly difficult. For example:

- Norfolk Vanguard repeatedly state that the population modelling approach that should be used is one that includes density dependence, and to use a density independent formulation is overly precautionary. The RSPB agree with the Applicant that there is strong evidence for density dependence acting on the kittiwake population of the UK, and that the mechanisms remain unknown. However the authors seem to have an inconsistent approach to density dependence, having previously recommended the use of density independent PVA outputs, (Furness *et al.* 2013)[19] saying "*In such circumstances the most robust approach is to avoid the temptation to include density dependence, since it is often based on the premise that 'it must be operating therefore it must be included', even if the mechanism is unknown*". (Note that this report is relied upon for both

[18] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, page 21, section 9, para 9.1
[19] Furness, R.W., MacArthur, D., Trinder, M. and MacArthur K. 2013. *Evidence review to 11 support the identification of potential conservation measures for selected species of 12 seabirds*. MacArthur Green, Glasgow.

suggested compensation schemes). Maintaining such an inconsistent position acts to increase the uncertainty inherent in the assessment and therefore the consequent need for precaution. It is also incorrect to state that density independent formulations are the most precautionary, as this is not always the case (where depensatory density dependence occurs, Horswill *et al*., 2017)[20].

- Hornsea Project Three carried out an inadequate survey, resulting in more uncertainty. A minimum of twenty-four consecutive months survey should be provided as an absolute minimum. Ideally even more should be provided to show the natural temporal and spatial variability in seabird density, especially given the 35-year proposed operational period. While Hornsea Three latterly carried out more surveys, these were inadequate and the Applicant has not responded to the RSPB's concerns with the additional survey. It is therefore impossible to make conclusions as to the scale of impact, again increasing the inherent uncertainty.
- Both misrepresent the position of NE, the RSPB and in the case of Hornsea Three, the Examining Authority. For example, in Appendix 4[21] Hornsea Three present collision risk modelling scenarios including one with "parameter assumptions used by the Examining Authority". This gives the implication of tacit approval of it by the Examining Authority, whereas these parameters were the result of a simple clarification request. For clarity the Examining Authority stated it: "…has not concluded on these matters and will continue to consider all points of view".[22]Both overstate the extent of precaution in their assessments. For example Norfolk Vanguard claim that the parameters used in collision risk modelling are over-precautionary, but do not mention that for both theirs and Hornsea Three aerial surveys, the survey timings provided after requests, demonstrated that early morning and late evenings were not surveyed, despite these being important foraging times for some seabirds (e.g. gannet, Garthe, *et al*., 1999[23]). This means that the mortality estimates are likely to be *underestimates* and the assessment cannot be seen as precautionary. These survey timing were only provided by request of the Examining Authority; it is not standard for them to be shown. It is therefore probable that the

[20] Horswill, C., O'Brien, S. H., & Robinson, R. A. (2017). Density dependence and marine bird populations: are wind farm assessments precautionary?. *Journal of Applied Ecology*, *54*(5), 1406-1414.
[21] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 4: Post Examination Mitigation and Project Envelope Modifications*.
[22] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-001920-190318%20R17%20Applicant%20.pdf
[23] Garthe, S., Grémillet, D., & Furness, R. W. (1999). At-sea-activity and foraging efficiency in chick-rearing northern gannets Sula bassana: a case study in Shetland. *Marine Ecology Progress Series*, *185*, 93-99.

historic data used in the cumulative assessment was similarly based on biased survey timings and therefore significantly underestimates mortality.

- There is a lack of consistency in approach to impact assessment between the developers that makes conclusions difficult to make. For example, in describing the turbine design mitigations, Norfolk Vanguard use MHWS (mean high water spring) whereas Hornsea Project Three use MSL (mean sea level). It is MSL that is used in the Collision Risk Model. In the in-combination Population Viability Analyses carried out Hornsea Project Three use a project lifetime of 30 years whereas Norfolk Vanguard use 35 years. Such inconsistency in approach makes it difficult to compare the proposed mitigation schemes. This difficulty is compounded where projections must be converted into compensation objectives and where there is a need to identify the least environmentally damaging projects.

38. For these reasons, the RSPB **recommends** that a standardised, generic approach to impact assessment, as agreed by the statutory nature conservation bodies, is adhered to and the results of any novel assessment method presented alongside those of the generic approach.

4. RSPB's updated position on adverse effect on integrity

Mitigation proposals

39. As requested by BEIS, both Hornsea 3 and Norfolk Vanguard have presented proposed additional mitigation measures to reduce collision risk with seabirds, which the RSPB welcomes. We have summarised the proposals common to each scheme in Table 3 below.

Table 3: Summary of additional mitigation measures to reduce collision risk common to each scheme

Mitigation measures	**Hornsea 3**	**Norfolk Vanguard**
Reduction in maximum number of turbines	Reduced to 231 (from 300)	Reduced to 158 (from 180)
Minimum draught height	Increased to 40m (at MSL)	Increased from 27m (above MHWS) to: - 35m above MHWS for models up to and including 14.6MW capacity - 30m above MHWS for turbine models of 14.7MW and above

Comments on the revised impact assessments

40. Following the changes to their turbine specifications, both Hornsea Three and Norfolk Vanguard have carried out revised assessments of collision mortality and the subsequent population scale impacts. The RSPB welcome the changes in turbine specification as these will reduce collision mortality in line with predictions in Johnston *et al*., (2014)[24]. In the case of Hornsea Three, due to inadequate survey and consequent inability for conclusions to be drawn as to scale of impact, we are unable to comment on the subsequent calculations. However, for Norfolk Vanguard, although they neglect to show the results of Population Viability Analysis (PVA) for the project alone, they do present in-PVAs for in-combination impacts, both with and without Hornsea Projects Three and Four. This modelling demonstrates that:

- The Flamborough and Filey Coast SPA kittiwake population will be **10-12% lower** in 35 years than it would be in the absence of developments included in the assessment

[24] Johnston, A., Cook, A. S., Wright, L. J., Humphreys, E. M., & Burton, N. H. (2014). Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. *Journal of Applied Ecology*, *51*(1), 31-41.

(excluding Hornsea Three and Four) and **20% lower** if the two Hornsea projects are included.

- The Alde-Ore Estuary SPA population of lesser black-backed gull will be **33% lower** in 35 years than it would be in the absence of the developments included in the assessment.

41. Clearly these population impacts are unacceptable. Both populations have experienced steep declines and are considered to be in unfavourable conservation status. As such *any* additional mortality to these populations must be considered an adverse impact, but reductions of the scale predicted, even after the proposed mitigation, will have a severe impact on the populations, moving them some way from the restore conservation objective.

The RSPB's updated position on adverse effect on integrity

42. Based on the RSPB's analysis of the additional mitigation measures proposed and associated revised collision risk modelling predictions, our conclusions on potential adverse effects on integrity remain unchanged from those set out in Table 2 above (see section 3). For the avoidance of doubt, we summarise below the RSPB's overall conclusions on potential adverse effects on site integrity arising from the Hornsea 3 and Norfolk Vanguard schemes at the end of Consultation 2.

43. With specific reference to kittiwake and LBBG, we conclude the in-combination impacts of each scheme will act to move the populations away from their restore objectives and thereby undermine the relevant site conservation objectives.

44. As noted in sections 2 and 3 above, the RSPB maintains its position on adverse effect on integrity of the FFC SPA in respect of gannets, guillemots and razorbills.

Table 4: The RSPB's position on impacts on the Flamborough and Filey Coast SPA and Alde-Ore Estuary SPA at the end of Consultation 2

Feature	SPA	Hornsea 3	Norfolk Vanguard
Kittiwake	FFC	**Alone:** Cannot exclude the risk of an adverse effect on site integrity **In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (irrespective of whether Hornsea Project Three figures are included)
Gannet	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)

Feature	SPA	Hornsea 3	Norfolk Vanguard
Guillemot	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)
Razorbill	FFC	**In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Adverse effect on site integrity exists (when mortality from Hornsea Three is included)
Assemblage	FFC	**Alone:** Cannot exclude the risk of an adverse effect on site integrity **In-combination:** Cannot exclude the risk of an adverse effect on site integrity	**In-combination:** Not possible to rule out adverse effect on site integrity due to collision risk and displacement (based on combined impacts of: kittiwake, gannet, guillemot and razorbill).
Lesser black-backed gull	Alde-Ore Estuary	Not applicable	**In-combination:** Adverse effect on site integrity exists.

45. As set out and discussed above (as well as in our responses to Consultation 1 for each scheme) the conservation objectives and Supplementary Advice for each SPA are central to the consideration of potential adverse effects on the SPA and its features and also for the consideration of any compensation required. Among other things, the Conservation Objectives for SPAs require the maintenance or restoration of the population for each qualifying feature and the supporting processes on which the habitats of the qualifying features rely. The Supplementary Advice then sets out the key attributes and targets for each qualifying feature of which the following are particularly relevant:

- Breeding population abundance;
- Connectivity with supporting habitats (safe passage);
- Restricting disturbance;
- Maintaining the extent, distribution, and availability of suitable breeding habitat; and
- Maintaining or restoring food availability.

Flamborough and Filey Coast SPA: kittiwake and seabird assemblage

46. Below, we consider the effects of the project on the following SPA features:

- Kittiwake
- Seabird assemblage.

Kittiwake

47. Notwithstanding its relative recent stability, the SPA population has declined by around 50% from its original SPA level of 83,700 pairs such that it is in unfavourable conservation status. It is for this reason that Natural England has set its conservation objective as one of restoration to its original designation population of 83,700 pairs, alongside targets of restoring safe passage for birds moving between nesting and feeding areas, reducing disturbance, maintaining the extent, distribution, and availability of suitable breeding habitat, and restoring food availability.

48. This decline has also acted to reduce the overall seabird assemblage population from its historic level of 305,784 individual seabirds (as per JNCC UK SPA Review 2001) to 216,730 individuals at the designation of the Flamborough and Filey Coast SPA.

49. In this context, the RSPB's summary view is that the predicted increases in mortality as a consequence of collision risk from Hornsea Three and Norfolk Vanguard in-combination with other plans and projects undermine the achievement of the SPA's conservation objectives and Natural England's targets. For Hornsea Three, the RSPB also considers that it is not possible exclude the risk of an adverse effect on site integrity alone.

The breeding seabird assemblage

50. The population abundance target for the seabird assemblage set out in Natural England's Supplementary Advice on Conservation Objectives is to maintain the population at its designation level of 216,730 individuals, while avoiding deterioration from its current level. It also sets out an additional target of restricting the frequency, duration and intensity of disturbance affecting, among other things, foraging, feeding, moulting and/or loafing birds, with particular reference to the vulnerability of some species to collision and displacement from offshore developments; and maintaining the extent, distribution, and availability of suitable breeding habitat.

51. Given the level of risk to the individual SPA features of kittiwake, gannet, guillemot and razorbill set out in Table 4 above, the RSPB's summary view is that the predicted increases in mortality as a consequence of collision risk from Hornsea Three and Norfolk Vanguard in-combination with other plans and projects undermine the achievement of the SPA's conservation objectives and Natural England's targets. For Hornsea Three, the RSPB also considers that it is not possible exclude the risk of an adverse effect on site integrity alone.

Alde-Ore Estuary SPA: Lesser black-backed gull

52. The population abundance target set out in Natural England's Supplementary Advice on Conservation Objectives is to restore the size of the breeding population of lesser black-backed gulls to above 14,074 pairs, whilst avoiding deterioration from its current level (based on mean peak count or equivalent). We estimate its current level is 1,842 pairs (five year mean 2015-2019, see Table 4 in the RSPB's Consultation 1 response to Norfolk Vanguard). It also sets out additional targets of maintaining safe passage for birds moving between nesting and feeding areas, reducing disturbance, maintaining the extent, distribution, and availability of suitable breeding habitat and maintaining food availability.

53. In this context, it is the RSPB's view that the increase in mortality as a consequence of collision risk, in-combination with other plans and projects, undermines the achievement of the SPA's conservation objectives and Natural England's targets. The RSPB continues to conclude an adverse effect on site integrity exists as a result of the Norfolk Vanguard project in-combination with other plans or projects.

RSPB's summary conclusion on adverse effect on integrity of FFC SPA and Alde-Ore Estuary SPA

54. As set out in section 2, for the purposes of this response, we have confined our comments to breeding kittiwakes from the FFC SPA and the seabird assemblage feature to which it contributes and breeding LBBG from the Alde-Ore Estuary SPA. In this respect, our conclusions for each scheme are as follows.

Hornsea Three

55. We conclude that it is not possible to exclude the risk of an adverse effect on site integrity on the FFC SPA, with reference to the following SPA features:

- **Kittiwake:** alone and in-combination
- **Seabird assemblage:** alone and in-combination

56. The RSPB continues to consider that significant issues with the information provided by the Hornsea Three Applicant mean that limited confidence can be attached to that Applicant's conclusions on the likely impacts of the Hornsea Three scheme. If we were able to have similar confidence in that additional information as we have had with the information provided by the end of the Norfolk Vanguard examination, it is likely we would reach similar conclusions for Hornsea Three as those we reached for the Norfolk Vanguard scheme. Therefore, our

more tentative conclusions on Hornsea Three should not be taken as the RSPB stating Hornsea Three is less damaging than Norfolk Vanguard, since they are based on less robust information and, therefore, we are unable to form clearer conclusions.

Norfolk Vanguard

57. We conclude that an adverse effect on site integrity on the FFC SPA exists, with reference to the following SPA features:

    - **Kittiwake:** in-combination (adverse effect on site integrity exists, irrespective of whether Hornsea Three figures are included)
    - **Seabird assemblage:** in-combination (not possible to rule out adverse effect on site integrity due to collision risk and displacement. This is based on combined impacts of: kittiwake, gannet, guillemot and razorbill).

58. We also conclude that an adverse effect on site integrity on the Alde-Ore Estuary SPA exists, with reference to the following SPA feature:

    - **Lesser black-back gull:** in-combination.

5. Alternative solutions and Imperative Reasons of Overriding Public Interest

59. It is the RSPB's view that the current approach to offshore wind deployment is not fit for the purpose of reaching net zero targets and that continued deployment risks effective decarbonisation as well as posing significant threats to nature at a time of ecological crisis and when healthy functioning ecosystems have been identified as crucial to the response on climate.

60. As both the Intergovernmental Panel on Climate Change's (IPCC)[25] and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Report (IBPES)[26] make clear, the climate and biodiversity crises are indivisible, and we will not stay within 1.5°C of warming without addressing the biodiversity crisis. Therefore, the implications of the 2019 IPBES report detailing the biodiversity crisis and its implications should be very much considered as integral to action on climate and not considered in isolation.

61. We therefore call for the urgent and transformative action, recommended by the Committee on Climate Change (CCC) to include translation of targets and commitments into strategic and robust planning which ensures sustainable and timely low carbon renewables in harmony with nature.

[25] IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. *World Meteorological Organization, Geneva, Switzerland, 32 pp.*

[26] IPBES. 2019. Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondizio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany

Marine planning – strategic, ecosystem-based approach

62. We also wish to add that part of the difficulties we now find ourselves in are due to the inadequate Strategic Environmental Assessments carried out for the offshore licensing zones meaning many leases have been granted to ecologically sensitive areas.

63. An ecosystem-based approach is a requirement of the UK Marine Strategy Regulations (2010)[27] which require "*that the collective pressure of human activities within the marine strategy area is kept within levels compatible with the achievement of good environmental status*". Therefore, a clear hierarchy between activities and policies within the marine plan needs to be established, with activities that hinder, or delay delivery of *good environmental status* given a lower priority within the marine plan area.

64. Currently marine plans do not provide a clear hierarchy of requirements and appear to operate on a first come first served basis. Marine planning should reflect the requirements of the Marine Policy Statement (MPS), namely

> "*Ensure a sustainable marine environment which promotes healthy, functioning marine ecosystems and protects marine habitats, species and our heritage assets*",[28]

and to provide clarity to stakeholders. Arguably, marine planning should only support and protect sustainable proposals and activities.

65. The IPCC highlights that "*rapid, far-reaching*" and "*unprecedented*" changes to the way society operates are needed to tackle the climate crisis. It is the view of the RSPB that overhauling UK marine planning and policy frameworks and policies is a vital part of the necessary transformative action. This must include assessing use of the marine environment including activities which currently take place outside marine planning.

Evaluating Alternative Solutions and Imperative Reasons of Overriding Public Interest

66. As mentioned above we wish to repeat here that the RSPB is of course fully supportive renewable energy and the vital contribution it will have to meeting the UK legally required target of net zero by 2050[29].

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[27] http://www.legislation.gov.uk/uksi/2010/1627/regulation/5/made
[28] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69322/pb3654-marine-policy-statement-110316.pdf
[29] The Climate Change Act 2008 (2050 Target Amendment) Order 2019.

67. However, it is essential that renewable energy, like all other development, is delivered through the least environmentally damaging projects and where that is not possible only when the clear and urgent *need* for it, which is in the public interest, is demonstrated.

68. Our concerns set out below are not in relation to the contribution Hornsea Three & Norfolk Vanguard will make to the UK net zero target and more specifically the Committee on Climate Change advice that "…*at least 75GW of offshore wind*"[30] will be required to enable the UK to meet that target. They focus on the tests themselves and the need to ensure each step and stage are passed by ensuring the Secretary of State has all necessary information to consider in detail and additional superfluous arguments are disregarded.

69. In our view the critical preliminary steps to considering the Regulation 64 tests are to identify the IROPI which will be served by the project and ensure these are clearly and precisely described; and include exactly how the project will contribute to that need.

70. This will then enable the Secretary of State to determine:

    a) Whether there are less damaging, feasible alternative solutions by which the project's contribution to the defined IROPI could be met; and if not

    b) Whether the project's contribution to the *need* outweighs the damage it will cause to the European sites and their species; and

    c) Whether compensation that is ecologically effective in compensating for all possible adverse effects, and financially and legally secured, can be provided.

71. It is not enough to couch Regulation 64 arguments in generalities with only broad descriptions of IROPI: the role of the project in meeting the claimed IROPI must be precisely described. And if the Applicants' statements lack the necessary precision with regard to the contribution of their projects to the claimed IROPI, it will be incumbent on the Secretary of State to carry out this analysis.

72. As set out below in more detail, we do not consider the Applicants have set out robust cases justifying the Projects in this context. In summary the key parts of the Applicants public interest objective arguments focus on the contribution of offshore wind in general to the Government's legal and policy objectives (primarily at a UK level) to:

    a) Increase renewable energy to reduce carbon emissions to combat climate change;

    b) Increase security of energy supply; and

[30] Committee on Climate Change (2019). *Net Zero Technical Report. 2019* (CCS Net Zero report).

c) Economic benefits deriving from (a) and (b).

73. The Applicants then seeks to categorise these under the Regulation 64 requirement of public interest, as follows:

- Human health
- Public safety
- Beneficial consequences of primary importance to the environment.

74. In addition, the Hornsea Three Applicant argues there will be economic benefits of Hornsea Three and these should also be considered as part of its IROPI case.

75. However, it is important to note that at no point in its submission does the Hornsea Three Applicant make anything more than general statements regarding how the projects themselves contributes to each of these public interests i.e. taking each of the claimed benefits (increased renewable energy, improved energy security, economic benefits):

a) How do each of these elements contribute to human health, public safety and beneficial consequences of primary importance to the environment and precisely which aspects of these broad categories will benefit?

b) What part of the UK population/economy will benefit from these public interests; and

c) What contribution will the project itself make to each public interest claimed?

76. This is essential analysis to provide the framework necessary to carry out the alternative solutions and IROPI tests. At present, this case is not made out.

77. Whilst we accept that there can be different aspects to the IROPI case and due to the absence of possible adverse effects on priority habitats or species, these are unconstrained, it is important to remember all that is required for something to be considered IROPI, as the Hornsea Three Applicant has helpfully set out[31]:

> "The parameters of IROPI are explored in DEFRA 2012 and MN 2000, which identify the following principles:
>
> • *Imperative* – Urgency and importance: There would usually be urgency to the objective(s) and it must be considered "*indispensable*" or "*essential*" (i.e. imperative). In practical terms, this can be evidenced where the objective falls within a framework for

[31] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, page 48, para 3.5

> one or more of the following (i) actions or policies aiming to protect fundamental values for citizens' life (health, safety, environment); (ii) fundamental policies for the State and the Society; or (iii) activities of an economic or social nature, fulfilling specific obligations of public service.
>
> • *Public interest*: The interest must be a public rather than a solely private interest (although a private interest can coincide with delivery of a public objective).
>
> • *Long-term*: The interest would generally be long-term; short-term interests are unlikely to be regarded as overriding because the conservation objectives of the Habitats and Birds Directives are long term interests.
>
> • *Overriding*: The public interest of development must be greater than the public interest of conservation of the relevant European site(s)."

78. Without passing each of these requirements it is our view that certain aspects of the Applicants' claimed IROPI cannot be considered.

79. In addition, as discussed in more detailed below, since it is the *need* that justifies the *harm* to the European sites, consideration of alternative solutions must include all aspects of that *need.* Currently the Hornsea Three Applicant in particular has not included detailed information of its IROPI case or clearly considered all possible alternatives for providing the same IROPI and whether those alternatives would cause less harm to the environment.

80. Without this much needed detail, it is simply not possible for the Secretary of State to make a robust determination on these important issues.

81. It is important to note that the tests set out in Regulation 64 are sequential legal tests and consequently they must be approached in the correct order. *Managing Natura 2000* is clear:

> The **absence of alternatives must be demonstrated**, before proceeding with the examination of whether the plan or project is necessary for imperative reasons of public interest (Court ruling in Castro Verde case C-239/04, paragraphs 36 – 39).[32]

82. Similarly, lack of possible alternative solutions and IROPI must be established before the issue of compensation can be considered. However, to identify possible alternative solutions, the public interest/need to be served must be clear – as it is the *need* that justifies the harm.

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[32] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final, section 3.7.4, page 57.

Therefore, is it important to discuss such matters in parallel in order to ensure both are fully considered.

Guidance

83. The RSPB notes the Hornsea Three Applicant's comments in paras 5.28 to 5.30[33] but does wish to repeat that the Defra guidance document *Habitats and Wild Birds Directives: guidance on the application of article 6(4) – Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures* 2012, states clearly in its Explanatory note at the start of the guidance: "*This guidance is issued as a stand-alone document on an interim basis.*" (contents page).

84. And it continues to be our view that more weight should be given to the European Commission's revised version of *Managing Natura 2000 sites*[34] as this guidance has been updated more recently in light of important CJEU Judgments on Article 6, Habitats Directive which of course need to be taken into account when considering the transposing domestic legislation.

85. We wish to add that although Brexit of course is a relevant factor and Defra is working on new guidance for the Habitats Regulations, until that guidance is finalised and published *Managing Natura 2000* remains the most update guidance available. However, the current interim Defra Guidance is of course useful with its UK specific references and therefore we like the Applicant have also referred to it in this submission.

Alternative solutions

86. *Managing Natura 2000,* clearly states that it is the absence of alternative solutions which needs to be addressed as above in paragraph 81, and:

> "The decision to go ahead with a plan or project must meet the conditions and requirements of Article 6(4). In particular, it must be documented that:

[33] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Pages 10-11.
[34] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final.

1. the alternative put forward for approval is the least damaging for habitats, for species and for the integrity of the Natura 2000 site(s), regardless of economic considerations, and that ***no other feasible alternative exists*** that would not adversely affect the integrity of the site(s);"[35] (our emphasis)

87. It is within the context of feasibility that the question of alternative solutions must be considered.

What alternative solutions should be considered?

88. Paragraphs 13 and 14 of the interim Defra guidance confirm that the competent authority must use its judgement to ensure that the framing of the alternative solutions test is reasonable by reference to the identified objectives, as they provide the context and set the scope for consideration of alternative solutions.

89. The Hornsea Three Applicant sets out the following points:

> "7.6…In considering alternative solutions to Hornsea Three, the Secretary of State may start from a position whereby the field is narrowed to a consideration of alternative locations, scale and designs for an offshore wind development.
>
> 7.7 It is noted that the RSPB appear to consider otherwise (**REP10-056b** at paragraph 40) and suggest DEFRA 2012 is in conflict with MN 2000 and that the latter should be preferred. RSPB contend that the correct approach to alternatives seeks to identify an abstract "aim" divorced from the project in hand (e.g. reduce climate emissions) and consider every possible alternative to that "aim".
>
> 7.8 The following headline points can be made in response to the RSPB position:
>
> - First, there is no legal or policy reason why guidance in MN 2000 must or should be preferred by the Secretary of State over DEFRA 2012, as contended by the RSPB. That is particularly so following Brexit.
> - Second, there is in fact no fundamental conflict. The advice in DEFRA 2012 is broadly consistent with MN 2000 and the Methodological Guidance. MN 2000 notes that: "*All feasible alternatives that meet the plan or project aims… have to*

[35] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final., section 5.2, page 56.

> *be analysed*"[36]. We see no substantive difference between identifying a 'project objective' (DEFRA 2012) and identifying the 'project aim' (MN 2000) …."[37]

90. We have discussed above the reason why the updated MN2000 should take precedence over the interim Defra guidance including that currently there is no domestic alternative to it.

91. In relation to the fundamental issue of what is a possible alternative solution, the RSPB considers that all possible alternatives that can meet the public interest(s) which the proposals serve need to be considered, requiring a clear view of each relevant public interest objective, the contribution of the project to each of those public interests and whether there are other ways the public need can be delivered without damaging Natura 2000 sites nor their habitats and species.

92. The Hornsea Three Applicant on the other hand suggests that:

> "6.4…the consideration of alternatives is plainly project and fact sensitive and specific. It must relate to a specific project and the particular objectives that project is designed to achieve …. As such, not all of the generic categories of potential alternative are relevant to every case….
>
> 6.5 Furthermore, the objective of the consideration of alternative is focussed on measures or options which would better respect the integrity of the relevant European site. As such, the consideration of alternatives is, to that extent, narrowly focussed on the particular aspects of a project found to give rise to an AEOI in respect of a European site and it is possible alternatives to those aspects that must be considered."[38]

93. To apply this narrow focus would be to ignore the principle purpose of this part of the legislation and how these derogations can only be allowed in very limited circumstances recognising the harm to European sites they will cause as well as the contribution of those particular European sites to the overall coherence of Natura 2000 Network. It is because of this national network contribution that IROPI must be a national interest as well as the consideration of possible alternative solutions requiring to be more than just alternative locations.

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[36] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final.3rd paragraph, in section 5.3.1.
[37] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 1: Annex A: Case Law, Guidance & Previous Decisions on Alternative Solutions*, pg 6
[38] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 1: Annex A: Case Law, Guidance & Previous Decisions on Alternative Solutions*: pg 4, paras 6.4 -6.5

94. *Managing Natura* 2000 clearly states:

> All feasible alternatives that meet the plan or project ***aims***, in particular, ***their relative performance with regard to the site's conservation objectives, integrity and contribution to the overall coherence of the Natura 2000 network*** have to be analysed, taking also into account their proportionality in terms of cost. They might involve alternative locations or routes, different scales or degrees of development, or ***alternative processes***.[39] (our emphasis)

95. This clearly frames the consideration of alternative solutions around the ***designated sites*** and their network and not the individual scheme which is being proposed. It also clearly envisages alternative ***means*** to achieve the ***aims*** of the project - in this case the reduction of carbon emissions and the provision of renewable energy.

96. Ultimately the question is the ***aim*** or *need* that the scheme seeks to achieve – which is to reduce carbon emissions, ensure the nation's electricity demand is matched by a sufficient supply of renewable energy and achieve government targets.

97. Consequently, the restriction to offshore wind by both Applicants is an unjustified restriction of the scope of the consideration of alternative solutions, as other renewable energy schemes as well as energy efficiency measures that seek to reduce demand would also serve the overall *aim/need*. This also accords with the interim Defra guidance:

> In some cases wide ranging alternatives may deliver the same overall objective, in which case they should be considered.[40]

98. The interim Defra guidance also notes

> The consideration of alternatives should be limited to options which are financially, legally and technically feasible. An alternative should not be ruled out simply because it would cause greater inconvenience or cost to the applicant.[41]

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[39] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final. Section 3.7.4, page 57.
[40] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*., at paragraph 13.
[41] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*., paragraph 18.

Geographical Limitations & Evaluation Approaches

99. The RSPB has some sympathy for the Hornsea Three Applicant's arguments in section 10 of its Appendix 1; Annex 1 re the consideration of possible alternative solutions in different countries. However, in relation to its arguments against such a broad consideration (despite it being in an EU Commission guidance document it relies on elsewhere)[42] this should not be completely dismissed since they still apply albeit it in a purely domestic context now.

100. Moving on to the Hornsea Three Applicant's arguments in relation to the correct *Approach to evaluation of feasible alternatives,* the RSPB is concerned by the Applicant's suggestion that other factors can be included in alternative solutions considerations. It states:

> 12.4 The Applicant submits that, contrary to what might be inferred from MN 2000 and the Methodological Guidance, on a proper examination of case law and EC opinions, this is an evaluative and **not a pure ecological ranking exercise and involves striking the best balance between ecological and other objectives,** taking into account the relevant IROPI, in line with the proportionality principle."(emphasis added)[43]

101. We would simply ask on which case law and/or EC opinions the Applicant is relying for its view that the inclusion of *other objectives* are permissible since no reference is provided and the only other reference we can find in their submissions is to an Advocate General's (AG) Opinion where the ECJ Judgment itself was entirely silent on these points (discussed further below)?

The Best Balance between Ecological and Economic Objectives

102. Coming on to that AG opinion's in **C-239/04** (Castro Verde) and the Applicant's reliance on it[44] for arguing that economic along with ecological considerations can be had for the alternative solutions assessment: the RSPB wishes the following points to be noted.

103. First as mentioned above the points made by the AG are not in the Judgment and although they may be considered as commentary, they are not case law.

104. Secondly the background of the case needs to be considered when determining whether these points have value (or not) for the proposals here. Castro Verde concerned a required new road and the questions of alternative solutions were therefore being asked against the

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[42] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Annex 1, page 9, para 10.4
[43] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Annex 1, page 12
[44] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Annex 2, pages 13-14

need for that road. This means that, by definition, alternative solutions were somewhat limited. As the Judgement (paras 38-40) clearly concludes it was the failure of the competent authority to consider alternative routes outside the SPA that meant it fell foul of the Article 6(4) Habitats Directive requirements. There is no discussion in the Judgment on whether economic considerations could be taken into account.

105. Therefore, it is the RSPB's view that this case is of limited assistance for proposals where the number of alternatives solutions are not so limited.

Alternative Energy Generation Technologies

106. Again the Hornsea Three Applicant dismisses all other possible means of providing renewable energy including onshore windfarms:

> "6.24 This option would similarly not meet any of the core project objectives for Hornsea Three and is complementary (not an alternative to) the clear and urgent need for offshore wind deployment at scale by 2030.
>
> RSPB argue that it is the "*ends"* that the project seeks to achieve (which RSPB say is low carbon electricity) and not the means (offshore wind) that is relevant as contended by the Applicant, in line with DEFRA 2012. RSPB's "abstract" approach is at odds with case law and the guidance in DEFRA 2012 (see Annex A: *Case Law, Guidance and Previous Decisions on Alternative Solutions*)."

107. We have reviewed Annex A and are not clear where precisely the caselaw and guidance assist the Hornsea Three Applicant in their position. The main case appears to be *Spurrer* where the question of an airport hub for the UK is being discussed and therefore in our view not directly comparable to the number of possible renewable energy projects nor possible energy efficiency saving.

> "DEFRA 2012 advises[45] with regard to the specific example of an offshore wind farm (second bullet, our emphasis added) that:
>
> *"In considering alternative solutions to an offshore wind renewable energy development the competent authority would normally only need consider alternative offshore wind renewable energy developments. Alternative forms of energy generation (e.g. building a*

[45] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*., at paragraph 13, second bullet point.

> *nuclear power station instead) are not alternative solutions to the project as they are beyond the scope of its objective.*"
>
> The Applicant considers that the above advice is both correct and not fundamentally at odds with MN 2000 as RSPB argue."

108. The RSPB disagrees with this particular element of the interim Defra guidance, partly as this approach is contradicted by *Managing Natura 2000* cited at paragraph 94 above (specifically "…They might involve alternative locations or routes, different scales or degrees of development, or ***alternative processes***.[46] (our emphasis)"). The RSPB of course considers that a nuclear power station may not be an appropriate alternative[47], but we consider that measures such as energy efficiency and/or alternative forms of renewable energy generation would be appropriate alternatives and within the scope of its objective, which is to help combat climate change (the same could be argued in terms of energy security and economic growth). Energy efficiency would help reduce the need for the scheme, whereas the alternative renewables (e.g. solar) would contribute towards the Government's renewable energy targets.

109. Within the Hornsea Three Applicant's Annex C Statement of need[48], the executive summary para 3 is clear on what the need for the project is

> "The case for need is built upon the contribution of the proposed development to the three important national policy aims of decarbonisation (Net-Zero and the importance of developing bulk zero-carbon generation assets); security of supply (geographically and technologically diverse supplies) and affordability."

110. Counter to both Applicants' positions we wish to make the following points in relation to the consideration of alternative solutions.

111. The RSPB acknowledges the success of the offshore wind sector and significance of this technology in decarbonising UK energy which is clearly set out in the 2030 target cited by the Applicants. The RSPB supports action to meet Government's 2030 target (40GW) which is delivered in harmony with nature and sets the UK on a sustainable trajectory to reach 2050

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[46] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final. Section 3.7.4, page 57.

[47] This view is set in terms of the types of energy generation, rather than in the context of the recent withdrawal of the Moorside and Wylfa schemes.

[48] Hornsea Three *Response to the Secretary of State's Consultation Appendix 1 Annex C: Statement of Need – Planning Act 2008*, Executive Summary, page 2

targets (75GW, Committee on Climate Change). In this context, whilst we maintain that the goal of these projects is the generation of low carbon energy which could be achieved through alternative renewable technology, we recognise the significant contribution that offshore wind must make to decarbonising the UK. On this basis, we question the ability of the current approaches to planning to deliver the significant upscaling required to meet 2030 and 2050 targets. For example, project proposals are limited to potentially sensitive leased areas; this approach is not strategic and in the context of Hornsea 3 and Norfolk Vanguard is restricting the consideration of alternative solutions which should include offshore wind in different areas potentially using floating turbines to allow development in less sensitive areas. Floating wind has recently been proposed for inclusion in the Contracts for Difference (CfD) for Low Carbon Electricity Generation. The Consultation on proposed amendments to the CfD scheme states (p25):

> "Floating offshore wind has the potential for deployment in deeper water sites, where fixed bottom offshore wind is either not technically feasible or uneconomic, and where wind speed can be higher. In the UK, this could open areas of Scotland, Wales and southwest England for deployment. This also potentially creates additional diversity benefits as generation will increasingly be moved beyond the east coast of England where different weather systems will operate"

112. Floating wind is arguably a crucial component of reaching 2030 and net zero targets both in terms of delivering the necessary energy capacity and overcoming the current challenges facing the sector.

113. The proposals also reinstate support for onshore wind and solar to ensure:

> "the rate and scale of new projects needed in the near-term to support decarbonisation of the power sector and meet the net zero commitment at low cost".

114. The Applicants makes the case on the basis of meeting 2030 targets but notes that it is unlikely that Round 4 will contribute to these targets. The validity of maintaining an approach to offshore wind deployment which may be set to fail a decade in advance is questionable.

115. Leasing Round 4 projects are very unlikely to be generating power on any scale before 2030. These projects would therefore not meet core project objectives (generating power from Q4 2025/ Q4 2026) and would not address the need the Government's ambition to deliver 40GW by 2030.

116. We note the CCC advice "that net-zero is only credible if policies are introduced to match. Existing ambitions must be delivered in full, challenges that have so far been out of scope must now be confronted".

117. The CCC Net Zero report clearly establishes the imperative for a suite of actions on climate and notes the importance of resource and energy efficiency, that reduce demand for energy across the economy highlighting that without these measures, the required amounts of low-carbon power, hydrogen and carbon capture and storage (CCS) would be much higher.

No feasible locations outside permitted offshore Zones

118. Both Applicants have sought to restrict consideration of alternative solutions to offshore wind farms with extremely little consideration of both alternative locations (onshore) or alternative technologies, with the Hornsea Three Applicant principally focusing on the former Hornsea Zone and possible different locations within it and the effects that may arise on the Natura Sites from those alternative locations and layouts.

119. As mentioned above the RSPB fundamentally disagrees with this approach and its disregard for the extent of the requirements that must be met when considering a possible derogation to the protection of European sites recognising their importance to the Natura 200 network, as required by the legislation.

120. In the event that the Secretary of State is minded to disagree with the RSPB's position on alternative solutions, we draw attention to the fact that there are already a number of consented offshore wind farms which have yet to be funded which would be capable of providing energy outputs to match that of Hornsea Three. Although BEIS would need to re-assess these to determine whether or not they are less damaging alternative solutions to the projects currently under consideration, using comparable impact assessment methodologies as far as practicable, these may offer valid alternatives to the Hornsea Three scheme that meet the narrow test set out by the Applicant.

Imperative reasons of overriding public interest

121. The interim Defra guidance is clear on IROPI:

> In practice, plans and projects which enact or are consistent with national strategic plans or policies (e.g. covered by or consistent with a National Policy Statement or identified within the National Infrastructure Plan) are ***more likely*** to show a high level of public interest. ***However consideration would still need to be given to whether***, in a

> specific case***, that interest outweighs the harm to the affected site***(s) and therefore whether IROPI can be demonstrated.[49] (emphasis added)

122. The RSPB respectfully submit that this statement, coupled with the points flagged above in relation to alternative solutions and the refusal by the government of two renewable energy NSIPs[50] (these are discussed below) provide a clear steer that damaging proposals are highly unlikely to satisfy the Regulation 64 tests.

National Strategic Plans/Policies

123. In addition, both Applicants rely on the first part of paragraph 26, the interim Defra guidance highlighting the importance of national strategic plans/policies, for example the Hornsea Three Applicant argues:

> The DEFRA guidance advises[51] that NPS and other documents setting out Government policy (e.g. the UK Renewable Energy Roadmap) provide a context for competent authorities in considering Article 6(4) and that projects which enact or are consistent with national strategic plans or policies (e.g. such as those provided for in NPS EN-1 and EN-3) are more likely to show a high level of public interest.[52]

124. This ignores the second part namely the further consideration required.

125. The RSPB consider that it is helpful to separate out the individual parts which the interim Defra guidance's covers e.g. in relation to 26, the following is important:

> National Policy Statements and other documents setting out Government policy (e.g. the UK Renewable Energy Roadmap) provide **a context** for competent authorities considering the scope of alternative solutions they will assess.[53] (emphasis added)

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[49] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*. Paragraph 26.
[50] The Navitus Bay offshore Wind Farm application was refused consent on 11th September 2015 and the Myndd Y Gwynt onshore Wind Farm application was also refused consent on 20th November 2015
[51] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*. Paragraphs 14 and 26.
[52] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, page 53, para 4.24. Norfolk Vanguard Applicant makes similar points in its *Habitats Regulations Derogation. Provision of Evidence*, pg 22, paras 59-63 & pg 47, para 152-153
[53] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*. Paragraph 14.

126. The RSPB of course recognise the important context that *national strategic plans or policies* provide, specifically EN-1[54] and EN-3[55]. However, when considering Article 6(4) they are by no means determinative nor, in our view, automatically demonstrate a high level of public interest[56].

127. In relation to these points raised by the Applicants it is important to note paragraph 1.7.13 of EN-1, which states:

> Habitats Regulation Assessments (HRA) have been carried out and published for the non-locationally specific NPSs EN-1 to EN-5 and for EN-6 which does specify sites suitable for development. As EN-1 to EN-5 do not specify locations for energy infrastructure, the HRA is a high-level strategic overview. Although the lack of spatial information within the EN-1 to EN-5 made it impossible to reach certainty on the effect of the plan on the integrity of any European Site, the potential for proposed energy infrastructure projects of the kind contemplated by EN-1 to EN-5 to have adverse effects on the integrity of such sites cannot be ruled out. The HRA explains why the Government considers that EN-1 to EN-5 are, nevertheless, justified by imperative reasons of overriding public interest, while noting that ***its conclusions are only applicable at the NPS level and are without prejudice to any project-level HRA, which may result in the refusal of consent for a particular application***. Section 1.7 of EN-6 sets out details of the nuclear HRA. (our emphasis)

128. This sentence in EN-1 is particularly important. In the context of the national overarching policy on energy it makes it clear that it is necessary for individual projects to be assessed on their own merits under Article 6(4) and that it is perfectly feasible for applications to be refused as a result of its project-level HRA.

129. Critically, *Managing Natura 2000* states:

> It is for the competent authorities to weigh up the imperative reasons of overriding public interest of the plan or project against the objective of conserving natural habitats and wild fauna and flora. ***They can only approve the plan or project if the imperative***

[54] DECC (2011) Overarching National Policy Statement for Energy (EN-1) (July 2011)
[55] DECC (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3) (July 2011)
[56] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, page 53, paras 4.22- 4.25, Norfolk Vanguard *Habitats Regulations Derogation. Provision of Evidence*, page 47, paras 152-153.

> ***reasons for the plan or project outweigh its impact on the conservation objectiv***e.[57]
> (our emphasis)

130. It will be up to the Applicants to demonstrate, in relation to particular SPA and SAC habitats and species which will be affected, that this requirement is being met. As *Managing Natura 2000* sets out, they will need to demonstrate that the contributions their respective proposals make to the claimed public interests, outweigh the public interest of conserving the relevant features of the FFC SPA.

Need for a Renewable Energy Supply

131. The Norfolk Vanguard Applicant focuses on the following key drivers to underpin their argued urgent need for renewable energy[58]:

- The need for energy security, including -
  - the need to secure safe, affordable, reliable energy, preferably generated in the UK for the UK market;
  - the need to replace existing ageing energy generation infrastructure;
  - the need to meet expected electricity demand whilst meeting climate change commitments; and
- The need to reduce greenhouse gas emissions by increasing energy generation from low carbon source, replacing high carbon energy sources such as coal and gas.

132. Whilst the RSPB (as mentioned above and below) does not dispute this need nor its urgency, we are concerned by Norfolk Vanguard conclusions

> "Only alternatives that have the potential to meet or deliver the Project Need and Objectives are considered in this assessment of alternative solutions. That is, the alternative would have to deliver against: *"the urgent need for offshore wind energy generation in order to help meet the requirement for 59GW of new electricity capacity by 2025 and the aspiration to achieve 33GW from renewable sources"*."[59]

Which, as discussed above have reduced the consideration to only offshore wind farms rather than renewable energy from any source.

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[57] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final., Box, page 59.
[58] Norfolk Vanguard *Habitats Regulations Derogation. Provision of Evidence*, page 22, para 60.
[59] Norfolk Vanguard *Habitats Regulations Derogation. Provision of Evidence*, pg 25 para 75

Considerations of health and safety public interest arguments by Hornsea Three Applicant

133. The Hornsea Three Applicant has made a number of statements about human health, public safety and beneficial consequences of primary importance for the environment, arguing that these three should be the core of any IROPI consideration[60] and that:

> "The public interest in Hornsea Three goes further than meeting legal and policy targets. Hornsea Three could be instrumental in combating climate change and the threats it poses to human beings and the environment (including seabirds). The health and well-being of our species, and the future of our planet, depends on the rapid deployment of renewable resource such as, and including, Hornsea Three." [61]

134. This includes citing these points as key parts of the Applicant's conclusions on IROPI:

> "Hornsea Three will contribute to tackling the priority climate change risks identified in the UK CCC's "UK Climate Change Risk Assessment", all of which impact the core IROPI of human health, public safety and the primary importance of the environment."[62]

135. Although some details are provided[63], the RSPB considers that the Applicant's arguments on these points merit careful consideration.

136. First, we disagree that the considerations of human health, public safety and beneficial consequence of primary importance for the environment can "automatically" be considerations. Careful consideration is required for any IROPI assessment. Therefore, praying them in aid of an IROPI argument does not negate the need for that detailed consideration to be carried out.

137. Second, the Applicant does not go on to set out how the provision of renewable energy through this specific project directly contributes to human health, public safety and beneficial consequences of primary importance for the environment, nor how this specific project would be "instrumental" to achieving each of these. It is the RSPB's view that it is not enough to make the case in this most general of terms. For these points to be part of the IROPI case, the

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[60] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, para 3.4.
[61] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, para 4.26.
[62] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, page 65, para 5.3.
[63] Although there are some details in Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case*, para 4.7 and Table 4.1 there are no H3 specific references.

contribution of the specific proposal to the claimed public interests must be provided. Since the Applicant has not done so, the RSPB considers it difficult for the Secretary of State to rely on human health, public safety and environmental benefits as part of the IROPI assessment for the Hornsea Three proposals.

138. Although the Norfolk Vanguard Applicant does mention human health, public safety and environment benefits arising from their projects[64], as mentioned above and below their focus within this section is primarily the provision of renewable energy.

Additional socio-economic benefits

139. At para 4.33 the Hornsea Three Applicant's Appendix 1 Shadow HRA[65] the Applicant argues that

> "The public interest in Hornsea Three goes further still and includes substantial economic benefit to the UK and its regions. Hornsea Three is capable of providing substantial benefits to the UK economy including facilitating confidence in the UK supply chain, growing a skilled workforce and providing wider community benefits."
>
> The Application included a socio-economic assessment of the potential benefits of Hornsea Three. The two primary economic benefits identified are employment (during the construction and operations and maintenance (O&M) periods) and investment in the UK economy".

140. The Hornsea Three Applicant goes on to discuss potential employment, investment and supply chain and skills development within this section[66] and includes these aspects in its overriding long-term public interest arguments.

141. Whilst of course the Project will have economic benefits (which may continue for years to come) and those may be capable of providing some public benefit, without detailed information how exactly they will benefit the UK's economy compared to other large scale

[64] Norfolk Vanguard *Habitats Regulations Derogation. Provision of Evidence* Pages 56-58, 60
[65] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Part 3, page 56
[66] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Part 3, pages 56-59

projects, it is not possible to suggest that Hornsea Three's economic benefits are of such a magnitude as to justify being part of its IROPI[67].

142. As mentioned above (paragraph 129) it is important to remember all aspects of the IROPI test and its purpose and that the public interest of development must be greater than the public interest of conservation of the relevant European sites[68], taking account of the geographical/national significance of those sites and ensuring IROPI arguments are considered in the same context – namely nationally.

143. As the Hornsea Three Applicant helpfully sets out at para 4.54[69]

> "For IROPI to arise, the public interest would usually be long-term. Each public interest identified above is a **long-term UK interest** – decarbonisation, security of supply, provision of low-cost energy, protecting the human species and the environment, providing employment opportunities, contribution to the UK economy, provision of skills training and community benefit." (emphasis added)

144. Again whilst we do not disagree with the first – *decarbonisation* and the resulting benefits to the environment – it is the inclusion of *security of supply, provision of low-cost energy, employment opportunities, skills training and community benefit, contribution to the UK economy,* – which we question due to the lack of any information on how the level provided by Hornsea Three are truly long term UK interests.

145. Without this information we disagree with the Applicant's suggested approach of including its project's socio/economic benefits as part of the IROPI considerations.

146. Again, although the Norfolk Vanguard Applicant has mentioned additional socioeconomic benefits in support of its IROPI case, including within its conclusions on IROPI[70], its main focus is on the provision of renewable energy.

Hornsea Three comparison with previous UK IROPI considerations

147. The Applicants relies on a previous IROPI decision – Able Marine Energy Park (AMEP). In addition, the Hornsea Three Applicant also cites Little Cheyne Windfarm as an important

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[67] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Part 3, pages 59-62
[68] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final, Box, page 59
[69] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1: Shadow HRA Derogation Case.* Part 3, page 60
[70] Norfolk Vanguard *Habitats Regulations Derogation. Provision of Evidence* Pages 54-55, 60

previous IROPI decision. The RSPB was involved in both and it is important for the details of these previous decisions to be compared to the applications before the Secretary of State now.

148. Whilst the RSPB did not entirely agree with the Secretary of State conclusions on IROPI for AMEP it is important to note the breadth of that project as the Applicant has helpfully listed (para 4.65) but can be summarised as principally to provide port and manufacturing facilities for offshore windfarms not only to aid their construction but also their maintenance and the resulting benefits that would flow from this, meaning in our view it could justify its economic claims on a longer term not just because of the additional provision of manufacturing but also due to servicing multiple windfarms and the maintenance service it would provide. In addition, the potential regeneration of a deprived region should not be overlooked.

149. The applicant has helpfully set out the key para from the Secretary of State Decision Letter, paragraph 17, where the IROPI case is summarised:

> *"the applicant has made a compelling case that the **overriding public interest in decarbonising** the means of **energy production**, securing energy supplies from indigenous sources, manufacturing large scale offshore generators, **increasing the UK's manufacturing base**, and regenerating the Humber sub-region together outweigh the loss of 45 hectares of a Natura 2000 site. He is satisfied that the AMEP development will make a significant contribution to meeting these imperative needs in the long term and will provide benefits for society as a whole. In this context, he agrees with the Panel that the **AMEP site provides a unique opportunity to support the offshore renewable energy industry while making a major contribution to employment and the economy**."*[71] (emphasis added)

150. For this case study to be relied upon as comparable to the Applicants under consideration now, more details are required from the Applicants as to how their argued socio/economic benefits are comparable with AMEP's.

151. In addition, the Hornsea Three relies on the Little Cheyne Windfarm Inspector's remarks about IROPI for that application. However, those remarks need to be put into the context of the

[71] Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1, Annex D: IROPI Case Studies February 2020*, pages 2-3.

limited number and size of windfarm applications being made prior to 2005 compared to the present situation as the Inspector highlighted in paragraph 461 of his Report to the Secretary of State[72]:

> *"I accept the need for renewable energy is urgent and in the public interest,* ***particularly where there is a significant lack of other proposals*** *to meet the Government's country-wide and regional targets by 2020."* (emphasis added)

Helpfully adding

> "*Whether that public interest can properly be characterised as "imperative" and "overriding" depends on the degree of harm..."*.

152. Therefore, we suggest that these previous decisions are not comparable with present circumstances nor with the Applications under consideration.

153. It is worth adding that there have been two other windfarms decisions that need to be considered.

154. First the Government's decision on 11th September 2015 to refuse consent for the Navitus Bay offshore wind farm demonstrated its willingness to reject a nationally significant offshore wind farm scheme due to its environmental impacts. The Decision Letter rejecting Navitus Bay addressed the interplay between the NPS policy statements and the potential impacts for an application:

> ... The Secretary of State accepts that the need for the development of the kind represented by the Application Development and the TAMO is in accordance with the policy set out in the relevant NPSs (EN-1 and EN-3) but she considered that, in this case, the potential impacts of the Application Development and the TAMO are of such a scale that they outweigh the policy imperatives set out in those Statements....[73]

155. Makes it clear that policy-driven consideration of need does not trump considerations of impact, and that consequently rejection of applications is justifiable if the decision-maker concludes that the impacts of the scheme are considered sufficiently serious.

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[72] And is helpfully included within Hornsea Three *Applicant's Response to Secretary of State's Consultation. Appendix 1, Annex D: IROPI Case Studies February 2020*, page 3.
[73] Secretary of State's Decision Letter, 11 September 2015, paragraph 52. The "TAMO" was a reduced 630 MW "Turbine Area Mitigation Option" scheme introduced by the Applicant in an attempt to address concerns about the original 970 MW scheme's likely impacts.

156. The Secretary of State subsequently rejected the Myndd Y Gwynt onshore wind farm application with limited consideration of national energy policy:

> The Secretary of State has had regard to the Energy National Policy Statements ("NPS") EN-1 (Overarching National Policy Statement for Energy) and EN-3 (NPS for Renewable Energy Infrastructure).[74]

157. Beyond this there was no consideration of energy issues such as need by the Secretary of State. Again, this counters the argument that need is unconstrained and that potentially damaging schemes should be consented.

158. In relation to Hornsea Three, it is worth noting that the Myndd Y Gwynt scheme was refused because the Applicant had failed to provide sufficient ecological information in the HRA, such that:

> 38. The Secretary of State cannot grant development consent ***because she is not able to conclude that there is no adverse effect on the integrity*** of the red kite feature of the Elenydd – Mallaen SPA. She is therefore refusing the Application in accordance with regulation 61(5) of The Conservation of Habitats and Species Regulations 2010. (our emphasis)

159. There was no requirement for Natural Resources Wales to prove that the scheme would have an effect – instead the onus was on the Applicant to demonstrate that there was no adverse effect on the integrity of the SPA. This is the approach required by the Habitats Regulations. Consequently, we contend that the situation there relates closely to the present situation.

160. Two key points can be taken from these Government decisions:

- The impacts of a scheme must be taken into account and may justify its refusal, even in the context of a clear national need for renewable energy generating infrastructure; and
- Applicants must fully comply with the requirements of the Habitats Regulations. A failure to support sufficient information to enable a proper conclusion at any stage of the assessment process is sufficient to justify the refusal of the application.

[74] Decision Letter, paragraph 9.

Concluding remarks on Alternative Solutions and IROPI

161. The RSPB has set out above the appropriate way to approach the legal tests that will need to be considered in the event that the Secretary of State agrees it is not possible to conclude that there will be no adverse effects on the integrity of European sites and their habitats and species on the basis of the best available scientific information. Having also considered in detail the main submissions from both Applicants on alternative solutions and IROPI in light of, in our view, the correct application of the legal tests, we do not believe that either have made a sufficiently robust case for there being no alternative solutions to their proposals nor that there is IROPI.

162. Therefore, the RSPB considers that the Secretary of State has not been provided with the necessary information to reach a conclusion on either part of the requirements and currently cannot consent the proposals on the basis of no alternative solutions and IROPI (the necessary compensatory measures are discussed below).

6. Compensatory measures

Introduction

163. In this section, we set out the RSPB's summary position on what we consider the correct approach to identifying and assessing proposed compensation measures. To help assess the measures proposed, we summarise the breeding ecology requirements of kittiwake and LBBG, as well as identify any additional pressures known to act on these species in the UK. We then go on to assess the compensation measure proposals put forward by Hornsea 3 and Norfolk Vanguard before setting out our conclusions and recommendation to BEIS.

164. Historically, UK compensation measures have been concentrated in the coastal (intertidal) environment to address the impacts of flood defences and port-related development. This has created a considerable knowledge base of the various challenges in implementing successful intertidal and related compensatory measures.

165. There is little or no such experience or knowledge base in respect of the practical design and implementation of compensation measures for breeding seabirds. The most helpful general reference in this context is an evidence review by Furness et al (2013)[75] for CEFAS to support the identification of potential conservation measures for selected species of seabird. In addition, bodies such as Natural England and the RSPB have considerable experience in the practical design and implementation of conservation management measures for a range of different seabird species to help maintain or restore their populations at a site level. Both Hornsea Three and Norfolk Vanguard have used Furness et al (2013) as their starting point for possible compensatory measures.

166. A critical issue to understand is that BEIS has asked each developer to set out:

> "*any in-principle compensatory measures proposed to ensure that the overall coherence of the network of Natura 2000 sites is protected*"

167. This has meant the Applicants' proposed measures have not been provided in detail along with how exactly they can be "secured". Therefore, notwithstanding any legal, financial and ecological difficulties with the in-principle measures proposed, at this stage BEIS is not able to grant consent for the schemes.

[75] Furness, B., MacArthur, D., Trinder, M and MacArthur, K (2013) *Evidence review to support the identification of potential conservation measures for selected species of seabirds*. Report to CEFAS.

168. Inevitably, further detailed work will be required including the Applicants demonstrating they are able to carry out the measures proposed before BEIS can be satisfied that any necessary compensatory measures have been fully secured. We return to this issue in our detailed comments and recommendations below.

The RSPB's position on compensation measures

169. The RSPB has been involved in many of the UK cases that have resulted in a requirement to provide compensatory measures since the first UK case in 1998. Lessons learned from this experience have helped shape the RSPB's understanding of the principles that should inform the provision of successful compensatory measures to meet the legal requirement to protect the overall coherence of the Natura 2000 network.

170. In this context, these requirements will relate to securing the coherence of the SPA network in respect of breeding kittiwakes and LBBGs, as these are the two SPA features currently under consideration.

171. The European Commission's updated guidance on Article 6[76] (the EC guidance) helpfully sets out a series of criteria[77] for designing compensatory measures. It essentially replaces its earlier guidance on these matters published in 2012 to take account of more recent decisions and caselaw. While both Hornsea Three and Norfolk Vanguard refer to some elements of the EC guidance, they do not set out all of the key criteria. Below, we have identified these elements and used these to frame our consideration of the compensatory measures proposed by Hornsea Three and Norfolk Vanguard.

Additionality

172. Critically, the EC guidance (section 3.7.6) makes the general, overarching point that:

> "*Compensatory measures should be additional to the actions that are normal practice under the Habitats and Birds Directives or obligations laid down in EU law*"

173. In practical and legal terms, this means compensatory measures must be additional to:

- Measures necessary to site management of the affected SPA or SAC e.g. to restore a designated feature to favourable status;

[76] EC (2018) *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (21/11/18) C(2018) 7621 final.
[77] *ibid*, section 5.4

- Measures designed to meet other obligations e.g. achievement of Good Environmental Status (GES) under the Marine Strategy Regulations 2010.[78]

174. As noted in section 3, both Hornsea Three and Norfolk Vanguard have agreed with the EC's Guidance that compensatory measures should be additional to existing obligations. [79,80]

Seabird Conservation Strategy for England

175. In the context of additionality, we draw the Secretary of State's attention to the announcement in January 2020 by Rebecca Pow (Environment Minister), that in 2020 Defra will be developing and publishing a comprehensive Seabird Conservation Strategy for England.[81] The plan will mirror the development of a similar strategy already in development in Scotland, and both aim to optimise the conservation prospects of seabirds through effective management of existing and emerging threats. Each strategy aims to prioritise a number of high-level actions to deliver this outcome. Identified threats to the recovery of seabirds include but are not limited to; bycatch mortality, wind turbine collision mortality, displacement by wind turbines, turbines as a barrier to species movement, reduction in prey by fishing and habitat loss.

176. The driver for these new conservation strategies is in part due to the continued decline of UK seabird populations, and the failure to achieve GES as required by the Marine Strategy Regulations 2010. On 9 May 2019, the UK's four administrations published their joint report on progress towards their shared ambition of achieving "*clean, healthy, safe, productive, biologically diverse oceans and seas*", and progress to delivering GES. The summary of progress towards GES, (https://moat.cefas.co.uk/summary-of-progress-towards-good-environmental-status/) demonstrates that to date, UK governments have achieved GES for only 4 of the 15 benchmarks measured. Breeding seabirds have failed to achieve GES and have continued to decline since 2012. Over two thirds of species assessed had experienced declines

[78] Marine Strategy Regulations 2010. No. 1627.
[79] Hornsea 3 *Response to the Secretary of State's Consultation. Appendix 2: Compensatory Measures.* Para 3.12.
[80] See paragraph 41 in: Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 1 – Flamborough and Filey Coast Special Protection Area – In Principle Compensation Measures for Kittiwake* and Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 2: Alde-Ore Estuary SPA – In Principle Compensation Measures for lesser black-backed gull*.
[81] https://www.gov.uk/government/speeches/minister-pow-committed-to-deliver-seabird-conservation-strategy

in breeding abundance of 20-30% or more since the early 1990s (Mitchell et al. 2018a).[82] Furthermore, the proportion of species experiencing widespread and frequent breeding failures has been increasing over the last decade (Mitchell et al. 2018b).[83] The recently published status report by JNCC (https://jncc.gov.uk/news/smp-seabird-stats/) further reinforces this downward trend.

177. This clear statement of Government intent to act to secure the recovery of seabirds in England is directly relevant to the consideration of additionality. Specifically, it signals an intention by Government to put in place measures that will reverse known declines, such as those at our most important seabird SPAs, e.g. kittiwakes at FFC SPA and LBBGs at the Alde-Ore Estuary SPA.

EC Guidance – summary of key points

178. We have reviewed both the EC and Defra[84] guidance on compensatory measures. Both are in broad alignment as to the principles to adopt when considering compensatory measures. As the EC Guidance is fuller and more up to date, we have used that as our primary reference, while drawing out any additional points made in the Defra guidance since it is UK focused.

179. In Table 5 below, we summarise the EC's criteria for designing compensatory measures and annotate them with additional commentary based on the RSPB's experience of the principles that should be applied when assessing compensatory measures drawing on previous compensation proposals and our knowledge of the species involved. We have used the combination of the EC guidance and the RSPB's experience in this field to assess the compensatory measures proposed by Hornsea Three and Norfolk Vanguard.

Table 5: Criteria for designing compensatory measures

EC criteria	**EC guidance summary** (emphasis added)	**RSPB additional commentary**
Targeted	Measures should be the **most appropriate to the impact predicted** and **focused on objectives and targets**	Must address the ecological functions and processes required by impacted species/habitat. Requires shared

[82] Mitchell, I., French, G., Douse, A., Foster, S., Kershaw, M., Neil McCulloch, N., Murphy, M. & Hawkridge, J. (2018a) Marine Bird Abundance. UK Marine Online Assessment Tool, available at:https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/birds/abundance/
[83] Mitchell, I., Aonghais Cook, A., Douse, A., Foster, S., Kershaw, M., Neil McCulloch, N., Murphy, M. & Hawkridge, J. (2018b) Marine bird breeding success/failure. UK Marine Online Assessment Tool, available at:https://moat.cefas.co.uk/biodiversity-food-webs-and-marine-protected-areas/birds/breeding-success/
[84] Defra (2012) *Habitats and Wild Birds Directives: guidance on the application of article 6(4). Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures*. Paras 28-36.

EC criteria	EC guidance summary (emphasis added)	RSPB additional commentary
	addressing the Natura 2000 elements affected. Must **refer to structural and functional aspects of site integrity and habitats/species affected**. **Must consist of ecological measures**: payments to individuals/funds are not appropriate.	understanding and agreement on what the impacts are i.e. need to agree nature, magnitude including that they will be continue for the length of project of impacts in order to define objectives for compensation measures. Clear objectives must be established for the compensation measures.
Effective	**Based on best scientific knowledge available alongside specific investigations for the location where the measures will be implemented**. Must be **feasible and operational in reinstating the conditions needed to ensure the overall coherence** of the Natura 2000 network. **Measures where no reasonable guarantee of success should not be considered**. The likely success of the compensation scheme should influence final approval of the plan or project in line with the prevention principle. The **most effective option, with the greatest chance of success, must be chosen**. **Detailed monitoring required** to ensure long-term effectiveness with remediation provisions if shown to be less effective.	Scientific evaluation of proposed measures must be carried out before consent is granted to avoid agreeing to measures that is/are not effective or technically feasible. This should include appropriate baseline survey and assessment. Compensation must address the impacted Natura 2000 feature to ensure overall coherence of the network for that feature is maintained. Substitution is not acceptable. Must be clearly defined timescales for delivery and measuring success. Monitoring must directly relate to the target species or habitat and the relevant ecological functions and processes. The compensation measures should be provided in perpetuity in line with obligations to ensure the overall coherence of the Natura 2000 network is maintained. Where it is not possible to devise compensatory measures to offset the adverse effects on site integrity, the project should not proceed.
Technical feasibility	**Design must follow scientific criteria and evaluation** in line with best scientific knowledge and take into account the specific requirements of the ecological features to be reinstated.	See **Effective** above.
Extent	Extent required **directly related to**: - the **quantitative and qualitative aspects inherent to the elements of integrity likely to be impaired** - **estimated effectiveness of the measure(s)**	Based on an assessment of the necessary ecological requirements to restore species' populations and the related habitat structure and functions identified in the compensation objectives. Determining the minimum appropriate quantity will require an understanding of

EC criteria	EC guidance summary (emphasis added)	RSPB additional commentary
	Therefore, ratios best set on a case-by-case basis. Ratios should generally be well above 1:1. Ratios of 1:1 or below only considered when shown measures will be fully effective in reinstating structure and functionality in a short period of time.	the quality of the compensation measures and how effective they will be in reinstating the required structures and functions. Any identified uncertainty in success should be factored in to increased ratios. However, if there is no reasonable guarantee of success that measure should not be considered (see **Effective** under EC criteria).
Location	**Located in areas where they will be most effective** in maintaining overall coherence of the Natura 2000 network. Pre-conditions to be met include: - **must be within same range/ migration route/wintering areas for bird species** and **provide functions comparable those justifying selection of original site esp. geographical distribution**; - **must have/be able to develop the ecological structure and functions required by the relevant species** (or habitat) - **must not jeopardise integrity of any other Natura 2000 site**. Spatial search hierarchy starting as close as possible to the impacted Natura 2000 site and working out from there.	While the preference is for compensation measures as geographically close to the location of the damage, it is important to consider whether or not the compensation measures will be subject to pressures impacting their efficacy in that location e.g. prey availability, disturbance, and/or other impacts from the same or similar developments. Therefore, compensation measures should be located so as to maximise proximity while minimising external pressures that may reduce likelihood of success.
Timing	Case by case approach but **must provide continuity in the ecological processes essential to maintain the structure and functions that contribute to the Natura 2000 network coherence**. Requires **tight co-ordination between implementation of the plan or project and the compensation measures**. Factors to consider include: - **no irreversible damage to the site before compensation in place** - **compensation operational at the time damage occurs**. If not possible, over-compensation required - **time lags only admissible if will not compromise objective of "no net loss" to coherence of Natura 2000 network**; - May be possible to scale down in time depending on whether the negative effects are expected to arise in short, medium or long term.	Compensation measures should be fully functional before any damage occurs to ensure the overall coherence of Natura 2000 is protected. This requires careful alignment of the timelines for implementing the plan or project and the compensation measures. Suggested time lags in delivering fully functional compensation will need to be carefully considered and can only be accepted where this will not compromise the continuity of essential ecological processes, Any effect of delay should be factored into the design and additional compensation measures provided (see also **Extent** above).

EC criteria	**EC guidance summary** (emphasis added)	**RSPB additional commentary**
	All technical, legal or financial provisions must be completed before plan or project implementation starts to prevent unforeseen delays that compromise effective compensation measures.	
Long-term implementation	**Legal and financial security required for long-term implementation** and **for protection, monitoring and maintenance of sites to be secured before impacts occur.**	Legal rights to secure and implement the compensation measures must be in place prior to consent being granted. And robust financial guarantees are required to fund implementation, monitoring and any necessary remediation measures. In line with Government policy, the Government should commit to including compensation measures, once delivered, within the Natura 2000 network.

180. The Defra guidance reinforces some of the points above, in particular by requiring:

- Consideration of whether the measure is technically proven or considered reasonable. Measures for which there is no reasonable expectation of success should not be considered (paragraph 31)
- Compensation should be proportionate and no more than is needed to protect the coherence of the Natura 2000 network, having factored in the need to increase the compensation to deal with any uncertainty, time lag etc (paragraphs 32 and 33)
- The need to condition the consent to include [remedial] actions should the compensation prove to be less successful than anticipated (paragraph 33)
- Compensation must be sustainable – therefore it is necessary to secure medium to long term management (paragraph 34); and
- Compensation must be secured before consents are given for the proposal to commence i.e. must be satisfied all the necessary legal, technical, financial and monitoring arrangements are in place to ensure the compensation measures proceed. If it is not possible to secure adequate compensatory measures, a derogation allowing the proposal to commence must not be granted (paragraph 35).

Breeding ecology requirements of target species

181. In order to assess the likely effectiveness of any proposed compensation measures it is important, in the context of the impacts of these offshore wind farm cases, to understand the key breeding ecology requirements of the species. As set out in the previous section, a successful and legally acceptable compensation measure will need to ensure it has addressed these requirements and any additional pressures known to act on the species in the UK.

Kittiwake breeding ecology requirements – summary

182. Annex A sets out a detailed summary of the main breeding ecology requirements for a successful kittiwake colony. Below, we provide an overview summary of the key elements. Any compensatory measure will need to ensure it has addressed these:

- **General**: The most oceanic of the UK's gulls, kittiwakes are true seabirds, not normally found inland like other gull species. They usually breed on sheer sea cliffs, where they may form huge colonies alongside other seabirds. Around 8% of the world population breeds in the UK. They forage almost exclusively at sea, and outside the breeding season they are rarely seen in coastal waters;
- **Nest sites**: Typically nests on high, steep coastal cliffs with narrow ledges. There are a few instances of nesting on man-made structures such as buildings, bridges, piers and seawalls;
- **Predators**: Nests are usually on sheer cliffs where they are inaccessible to mammalian predators, though there have been some recorded instances of mammalian predation at kittiwake colonies, presumably where they have nested on shallower slopes that are accessible to mammals. Avian predators such as large gulls, great skuas, carrion crows and peregrines can cause localised issues at some kittiwake colonies in some years. Nests in areas of low nest density, or those nearer the tops of cliffs have been shown to be more vulnerable to avian nest predation, perhaps explaining why kittiwakes usually preferentially nest in the lower sections of cliffs and in large aggregations.
- **Food availability**: Eats mainly small fish and some marine invertebrates: in British waters, these tend to be energy-rich species such as sandeels and sprats. It is a pelagic, surface-feeding species that roams over large areas in search for sparsely distributed patches of food. Recent seabird tracking has shown that kittiwakes breeding at the Flamborough and Filey Coast in 2017 foraged up to 324 km from the nest site, though most foraging trips are shorter. Changes in the availability of its key prey species, sandeel, have been

linked to climate change and over-fishing in the North Sea. Breeding success and the likelihood of breeding failure have been shown to be negatively affected by high sea surface temperatures, by the presence of an industrial sandeel fishery and by the level of sandeel fishing mortality in preceding years. These factors have been shown to affect sandeel abundance.

LBBG breeding ecology requirements – summary

183. Annex B sets out a detailed summary of the main breeding ecology requirements for a successful LBBG colony. Below, we provide an overview summary of the key elements. Any compensatory measure will need to ensure it has addressed these:

- **General:** Lesser Black-backed Gulls are adaptable, occupying a variety of natural and urban habitats. Predation and food availability are the key drivers of population changes and distribution. Avoiding predation affects colony location in particular, and perhaps also the habitat selection of the nest site within the colony. Food availability will influence whether breeding takes place (through the condition of the adult female) and is also important in determining the outcome of the breeding attempt. Breeding is often in mixed colonies with Herring Gulls. Larus fuscus graellsii is the subspecies present in the UK;
- **Nest sites**: nests are generally located on a solid surface, usually on the ground although sometimes on flat or gently sloping roofs, especially those topped with shingle or colonised by lichens and mosses. Habitat at the nest site can vary. The most-preferred breeding sites are open with surrounding vegetation which may combine the advantages of an open aspect (visibility of potential predators and a drier, sunnier microclimate) with shelter and hiding-places for the chicks once mobile. Dense vegetation is more usually avoided and areas of taller vegetation within a colony are associated with indicators of lower-quality adults suggesting these are less-preferred areas;
- **Predators**: site selection by Lesser Black-backed Gulls suggests that areas inaccessible to ground predators are particularly important as colony sites;
- **Food availability**: a generalist and opportunistic feeder. There is evidence of individual specialization in the use of different food resources and also of differences between males and females, with the larger males, spending more time offshore and foraging at fishing trawlers. In addition, there are reports of increasing numbers of LBBGs following

tractors, e.g. spreading muck and slurry or cutting silage, while supplementary feeding of livestock also presents an opportunity for gulls. Tracking data shows significant use of open-air pig units in some areas. Colonies with access to a variety of food resources are more likely to be resilient to short- and long-term changes in accessibility to particular types of food. LBBGs have been found to feed more at sea than other sympatric gull species and are known to be capable of long foraging flights;

- **Disturbance:** human activity can deter Lesser Black-backed Gulls from using a breeding site.

Kittiwake compensation proposals by Hornsea Three and Norfolk Vanguard

Overview

184. Both Hornsea Three and Norfolk Vanguard have used Furness *et al* (2013) as their starting point for consideration of potential compensation measures to improve productivity of breeding kittiwakes. Table 6 below summarises their conclusions on the most appropriate measure to take forward and provides RSPB comments.

Table 6: summary of conclusions on potential kittiwake compensation measures considered by Hornsea Three and Norfolk Vanguard with RSPB comments

Potential compensation measure	Hornsea Three conclusions[85]	Norfolk Vanguard conclusions	RSPB comments
Measures in Furness et al (2013)			
Closure of sandeel and sprat fisheries in UK waters	☒ Site management measure: so not additional. Not in Hornsea Three control to secure. Political complexity and uncertainty with controlling European fisheries.	☒ Strong evidence reduced abundance of sandeels as result of high fishing effort (Dogger Bank/southern North Sea) has led to reduced kittiwake breeding success at FFC SPA. Changes in fishery management to reduce fishing mortality would permit stock to recover and	The RSPB agrees that reversing the reduction in prey availability to kittiwakes (caused by a combination of climate change and fisheries pressure) is essential to secure recovery of the general kittiwake population and specific colonies. For (SPA) colonies in unfavourable status, such as the FFC SPA, it

[85] Based primarily on Annex C *Flamborough & Filey Coast SPA Compensatory Measures Options Screening* in Hornsea 3 *Response to the Secretary of State's Consultation. Appendix 2: Compensatory Measures.*

Potential compensation measure	Hornsea Three conclusions[85]	Norfolk Vanguard conclusions	RSPB comments
		increase breeding success at FFC SPA. Powers do not currently exist to manage fishery for compensation purposes: - Powers exist under Common Fisheries Policy in respect of necessary conservation measures, but not compensation. - UK would need to create powers for domestic management body. Small scale change required to deliver Norfolk Vanguard compensation difficult to measure against larger scale effect of a fishery management measure. Longer-term strategic compensation option for offshore wind farms with cumulative effects. Powers do not currently exist.	would properly be regarded as a site management measure at this time. It will be important to understand how it might be put into effect and what benefit particular measures (type and scale) could provide. Improving prey availability fits with the Government's approach of reducing overall pressure on seabirds envisaged in its forthcoming Seabird Conservation Strategy (see above). This should form part of a broader approach to look at all pressures and threats to seabirds (including offshore wind) and identify ways to reduce or remove them. Any consideration of fisheries management as a possible future compensation measure requires careful analysis (ecological, legal and policy) to determine whether or not it is appropriate to be considered as a potential compensation measure and under what circumstances.
Predator control			
- *Mink eradication* - *Feral cat eradication* - *Rat[86] eradication*	☒ for FFC SPA/☑ wider Ruled out at FFC SPA due to lack of evidence suggesting mammalian predation is problem. Mink/rat (and mouse) eradication screened in for areas beyond FFC SPA if colonies found to exist where predator eradication considered implementable and have strong likelihood of positive effects to seabird assemblage.	☒ Not considered relevant to FFC SPA as mammalian predators not recorded and colony characteristics mean birds have good protection. More widely, predation by mammals considered rare. Few cases recorded. Highly doubtful benefit as a compensation measure.	Whilst there is some evidence that mammalian predation of kittiwake nests can occur, this is thought to be unusual and we are not aware of any robust evidence that this is limiting populations. We agree with Norfolk Vanguard's position that it is highly doubtful that it would have benefits as a compensation measure. Even if it could be shown that predator control might

[86] Hornsea Three include consideration of house mouse in conjunction with rats.

Potential compensation measure	Hornsea Three conclusions[85]	Norfolk Vanguard conclusions	RSPB comments
			feasibly benefit kittiwakes, predator control projects to help seabirds are normally only effective if implemented in places where there is a plentiful food supply, such that populations are limited by the lack of safe nesting habitat, not by food. The available evidence suggests that kittiwake populations across the UK are currently limited by food supply, and so predator control is only likely to be effective in areas where the food supply can be increased (e.g. through fisheries management measures as outlined above)
- *Fox exclusion*	☒ Screened out as no records of fox predation so limited effectiveness at FFC SPA.	See above	Agree with both Hornsea 3 and Norfolk Vanguard that measures to exclude foxes are unlikely to have any effect on kittiwakes.
- *Great skua exclusion*	☒ Screened out as no records of great skua predation so limited effectiveness at FFC SPA.	Localised issue to Orkney and Shetland	Agree – localised issue to Orkney and Shetland.
Artificial structures for colonies	☒ Ruled out as nest space not constraint at FFC SPA nor is it appropriate given nature of cliffs/ practicalities at FFC SPA. Wider, lack of evidence re: - nest space availability limiting breeding success at UK SPAs. - That obtaining evidence on species' benefits not achievable on Hornsea Three timescales.	☑ Strong evidence kittiwakes in southern North Sea limited by suitable nesting habitat. Implies artificial nesting sites could attract kittiwakes. Various examples of kittiwakes nesting on man-made structures. Options to build at coast or at sea. Unknown how many pairs of kittiwake would colonise. Potential for good food supplies in southern North Sea if sandeel stock is managed. Fledged young at risk of collision with offshore wind	Access to a good food supply is critical to the likely success of this measure. Norfolk Vanguard proposal relies on reinstatement of good food supply in southern North Sea. Evidence suggests that kittiwake productivity is currently limited by food supply in the Southern North Sea (e.g. Carroll et al 2017).[87] Norfolk Vanguard Habitats Regulations Derogation Appendix 1, paragraph 87, proposes aiming for a

[87] Carroll, M.J., Bolton, M., Owen, E., Anderson, G.Q.A., Mackley, E.K., Dunn, E.K., and Furness, R.W. (2017) *Kittiwake breeding success in the southern North Sea correlates with prior sandeel fishing mortality*. Aquatic Conservation: Marine and Freshwater Ecosystems 27: 1164-1175.

Potential compensation measure	Hornsea Three conclusions[85]	Norfolk Vanguard conclusions	RSPB comments
		farms. Need to "over compensate".	colony of 200 pairs achieving a breeding success of 1 chick per breeding pair. This is almost double the current productivity rate at the Flamborough and Filey Coast in recent years (e.g. 0.55 fledglings per breeding pair in 2019; Lloyd et al 2019).[88] There is no evidence that food supplies in the Southern North Sea are currently sufficient to achieve the level of productivity suggested here. Requires evidence on ability to create de nouveau structures that will attract kittiwakes to the colony size aimed for. Reasons for kittiwakes nesting in urban areas not fully understood: thought that nest sites replicating ledges and access to food are key. Must avoid known pressures e.g. mortality from offshore wind farms. Provision of alternative nest sites not guaranteed to succeed. Example of deliberate provision of alternative structure: Gateshead kittiwake tower. Only supporting about 30% (100 pairs) of original target of 300 pairs: birds have nested elsewhere instead.
Measures not in Furness et al (2013)			
Reserve creation/ provision of new site and conservation measures			
- *New area for designation*	☒ Existing requirement to designate sites that qualify	N/a	Agree – existing legal requirement to classify the "most suitable territories" as SPAs. Therefore, not

[88] Lloyd, I., Aitken, D., Wildi, J and O'Hara, D. (2019) *Flamborough and Filey Coast SPA Seabird Monitoring Programme. 2019 Report.* RSPB Report.

Potential compensation measure	Hornsea Three conclusions[85]	Norfolk Vanguard conclusions	RSPB comments
	for SPA designation, so not additional.		additional as SPA classification of a "most suitable territory" cannot be compensation.
- *Extend existing designated site*	☒☑ Position unclear. Consider it might be a component part of a compensation measure but Hornsea Three can only support, not secure designation.	N/a	As above, SPA classification cannot be compensation. (Government policy is that compensation measures should be incorporated into the Natura 2000 network when they have met their objectives.)
- *Enhance protection (biosecurity) within existing protected area*	☒☑ Position unclear. Screened out by reference to Defra review of Highly Protected Marine Areas. Yet biosecurity is included as a component of Hornsea Three proposed compensation package.	N/a	Notwithstanding comments on mammalian control option (see above), biosecurity measures must be an integral part of any such option – not separate as described here.
Recreational disturbance management	☒ Screened out as recreational pressures already managed by RSPB and therefore not additional.	N/a	Agree – not additional. Note that RSPB only responsible for management of Bempton Cliffs stretch of FFC SPA.

185. In summary, each developer has reached contradictory conclusions on their preferred options for kittiwake compensatory measures:

- **Hornsea Three identifies control of invasive mammalian predators as its preferred option**. This is rejected by Norfolk Vanguard on basis of predation by mammals considered rare and it is of highly doubtful benefit as a compensation measure.
- **Norfolk Vanguard** identifies provision of artificial structures for colonies as its preferred option. This is rejected by Hornsea Three on basis of lack of evidence that nest space availability is limited breeding success and obtaining evidence on species' benefits of this measure is not achievable on Hornsea Three project timescales.
- **Both reject fisheries management**. Notwithstanding its likely success in improving kittiwake breeding productivity, it is essentially a measure necessary for site management of the FFC SPA and no developer has the ability to secure it. Any consideration of fisheries management as a possible future compensation measure requires careful analysis (ecological, legal and policy) to determine whether or not it is appropriate to be considered as a potential compensation measure and under what circumstances. The

RSPB notes Norfolk Vanguard's analysis concludes the powers and mechanisms to secure fisheries management as a compensation measure do not yet exist.

186. Below, we set out additional detailed comments on the specific proposals by each developer.

RSPB detailed comments on the preferred kittiwake compensation measures of Hornsea Three

187. Hornsea Three's preferred compensation measure can be summarised as a combination of:

- Invasive mammalian predator eradication outside the current SPA network; combined with
- Biosecurity.

188. The RSPB considers these should be treated as a single compensation measure, given that biosecurity measures are normally treated as an integral component of invasive mammalian predator eradication programmes.

189. Details of the compensation measure include:

- Establish an Offshore Ornithology Engagement Group to help shape and inform the nature and delivery of the compensation post-consent. The Group would be consulted on the Kittiwake Compensation Plan prior to submission to the Secretary of State. The Kittiwake Compensation Plan must contain an implementation timescale and carried out as approved.
- The Kittiwake Compensation Plan to be submitted to the Secretary of State no later than 12 months prior to commencement of any wind turbine generator. No wind turbine generator to be commenced until the Secretary of State has approved the Kittiwake Compensation Plan. The Secretary of State must consult the MMO and Natural England before approving the Kittiwake Compensation Plan.
- The Kittiwake Compensation Plan must contain an implementation timescale and be carried out as approved.
- Objective of the compensation measure is to attain 100% removal of invasive mammalian predators for the chosen island(s) and to achieve an [unspecified] improvement in kittiwake productivity at the chosen colony(ies).

- Identification of suitable islands would include:
  - Review of JNCC Seabird Monitoring Programme to identify potential restoration sites;
  - Desk study assessment as to the presence of mammalian predators on each island;
  - Avoidance of islands considered too close to current or planned offshore wind farms
  - Selection of islands outside the current kittiwake SPA network;
  - Greater than 25km from SPAs where great skua is a designated feature;
  - Careful consideration of future predator-prey relationships to identify those sea areas most likely to support good food supplies;
  - Those that would benefit species in addition to kittiwakes
  - Ground truthing to assess abundance of mammalian predators and current seabird populations to inform population viability assessments
- Devising an appropriate eradication programme to be delivered over a period of 6-12 months (depending on target species and size of island)
- Monitoring of eradication success and kittiwake breeding productivity and associated reporting.

Correction

190. The RSPB wishes to correct a statement in the Hornsea Three documents that the RSPB has expressed an interest in being a delivery partner for this measure.[89] The RSPB has not indicated such an interest. As with all compensation scheme discussions the RSPB has ever been involved in, the RSPB's focus has been and is on helping to ensure that measures with a reasonable guarantee of success are identified and secured, should the Secretary of State conclude that there are no alternative solutions and the scheme is justified on IROPI grounds. This was made clear in our discussions with Hornsea Three. In order to remain objective, we take no view on our future involvement in the design or implementation of secured compensation measures post-consent. However, we welcome acknowledgement of the RSPB's expertise in this particular area of conservation management.

191. In Table 7 below, we review the compensation measure against the EC criteria set out in Table 5 above and some additional considerations.

[89] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 2: Compensatory Measures.* Para 5.96.

Table 7: RSPB review of Hornsea Three kittiwake compensation measures: invasive mammalian predator eradication and biosecurity

EC criteria/additional consideration	RSPB comment
Additionality	If successful, the measure would be additional to other measures already required under Article 6 as it is not currently a necessary conservation measure. However, there is little empirical evidence to have confidence that the invasive mammalian predator eradication will have any impact on increasing breeding productivity among kittiwakes. Kittiwakes usually nest on narrow ledges on tall, vertical or near-vertical cliffs that are not accessible to mammals, hence in most kittiwake breeding colonies the only nest predation that can feasibly occur is by avian predators. Nests on flatter or more gently sloping areas that mammals can access do occur in some places, but are by far the minority. The cited example of the Isles of Scilly[90] is based on out of date information. As of 2019,[91] the kittiwake population on the Isles of Scilly was just 20 pairs at one sub-colony, a 93% reduction since 2006 (across 6 sub-colonies). Productivity in 2018 had been zero chicks fledged per pair. In 2019, it was only marginally better (0.05 chicks per pair) due to avian predation (peregrine). Avian, rather than mammalian, predation is considered to be the main cause of the species' recent decline at this site.
Targeted	For the reasons set out elsewhere in this table (e.g. see **Additionality** and **Effective**), the RSPB does not consider this measure can readily be targeted at kittiwake, given the poor evidence base that this species is at significant risk from mammalian predation and therefore will respond positively to eradication measures. Hornsea Three tacitly acknowledge this by regular reference to the benefits that could be provided to other, non-target, seabird species. Any such benefits would be irrelevant to protecting the coherence of the Natura 2000 network for kittiwakes.
Effective	As noted by Norfolk Vanguard's review of this type of measure, there is little scientific evidence that kittiwakes will benefit from invasive mammalian predator eradication and associated biosecurity.
Technical feasibility	Invasive mammalian predator eradication is technically feasible. As noted by Hornsea Three, it requires expert **eradication** contractors to undertake the work. Based on the RSPB's experience of invasive mammalian predator eradication schemes, our summary view is that: - A full-scale feasibility study is required by a **suitable eradication expert contractor**; - To be sure of any "reasonable guarantee of success", any feasibility study must be carried out before DCO consent is granted and: o Must be against the 7 feasibility criteria set out in Table 1 on page 18 of the Manual of the UK Rodent Eradication Best Practice Toolkit (2018)[92] i.e. ▪ Technically feasible ▪ Sustainable

[90] Hornsea Three *Response to the Secretary of State's Consultation. Appendix 2: Compensatory Measures.* Para 5.79.
[91] Isles of Scilly Wildlife Trust (2020) *Seabird Monitoring & Research Project. Isles of Scilly 2019*.
[92] See: http://www.nonnativespecies.org/index.cfm?pageid=613

EC criteria/additional consideration	RSPB comment
	▪ Socially acceptable ▪ Politically and legally acceptable ▪ Environmentally acceptable ▪ Capacity ▪ Affordable. o There is no reason to deviate from the approach set out in this toolkit where the target predators are rodents; o Any biosecurity measures must be secured in perpetuity. - It will require up to date and directly comparable population survey information to provide a robust baseline e.g. breeding pairs and breeding productivity. Reliance on the JNCC Seabird Monitoring Programme would be insufficient as this only monitors a subset of "representative" colonies, not all sites. However, as noted elsewhere, technical feasibility (in delivering eradication of the target mammalian predator) does not equate to benefit to the target beneficiary species here: kittiwake. Further evidence reviews and research are required to demonstrate that kittiwakes will benefit from this measure. If that evidence of benefit is properly established, a key criterion that should be considered before any invasive mammalian predator eradication scheme is implemented as a compensation measure, is whether there is a good food supply for kittiwake, the target species. If there is not, then the benefits of removing mammalian predators for kittiwakes will not be fully realised and there will continue to be legitimate doubt as to whether the compensation objectives will be achieved.
Extent	Notwithstanding our concerns as to the efficacy of this measure, to determine the extent requires further work to convert the level of cumulative collision risk triggering adverse effect in to appropriate compensation objectives, with particular reference to the total population required, its realistic productivity and survival rates and the growth curve to achieve that population. This in turn would need to take account of the impacts on productivity identified by the applicant in relation to: - collision risk mortality; and - food supply. As set out by Hornsea Three, this should be carried out for a variety of locations around the UK coast to identify locations with the greatest chance of success. For this reason, we do not understand Hornsea Three's rationale in selecting an arbitrary upper limit of 500ha. The extent should be driven by a careful analysis of the ability to achieve the required increase in breeding productivity and population.
Location	The RSPB agrees in principle with Hornsea Three's approach to identifying a suitable location for a mammalian eradication programme i.e. need for a comprehensive review of based on the best available science and up to date population information. However, this must be completed before any

EC criteria/additional consideration	RSPB comment
	consent is issued in order to determine whether or not there is a reasonable guarantee of success (see **Summary** below). We also welcome recognition that any location selected must minimise additional pressures by: - avoiding proximity to current or planned offshore wind farms - identifying those sea areas most likely to support good food supplies in the long-term. With regards to up to date population information, we note that much of the information cited by Hornsea Three is extremely old. Given the ongoing trend of kittiwake population decline, any such review needs to be based on the most up to date information (see **Technical Feasibility**). Given our serious concerns as to the efficacy of this proposed measure, we make no comment on the outputs of its initial site selection process. As with our comments on Norfolk Vanguard's artificial nest structure proposal, we **recommend** that an expert working group is established to review the evidence on potential measures with the aim of reporting to the Secretary of State on its findings and recommendations.
Timing	The RSPB is very concerned that Hornsea Three's proposal does not commit to implementing its compensation measures before the first operation of any turbines. It would be concerning if this was the case with a proven method but is especially so given the unproven benefit of invasive mammalian predator eradication for kittiwakes. However, the experimental nature of the measure means there is no guarantee of a positive response by breeding kittiwakes and. thereby the cumulative adverse effect predicted may not be offset. There remains a high risk that the eradication programme could fail to benefit breeding kittiwakes. In addition, there are several practical, legal and financial challenges to overcome which must be factored into the proposed timeline before consent is granted, including: - Availability of a **suitable eradication expert contractor** to carry out a **full-scale feasibility study** and, if required, to implement the eradication. - identification, ground truthing and survey of potential islands; - securing landowner agreements; - securing acceptance of any local communities; - securing consents and permissions from the relevant decision-making authorities (including Statutory Nature Conservation Bodies), especially if these are located outside England as seems most likely; - understanding the legal practicalities related to enforcement by the Secretary of State if the compensatory measure is located outside England and ensuring the appropriate legal and financial mechanisms for enforcement can be put in place. This is likely to require co-operation between BEIS and the relevant devolved administration. Timescales for ground-truthing and planning vary greatly depending on circumstances of island(s) selected. The greater the complexity, the greater

EC criteria/additional consideration	RSPB comment
	the time required to **secure** the project. Can take anywhere between 1-10 years e.g.: - Shiants and Scillies: c.10 years - Lundy: c. 5 years.
Long-term implementation	BEIS's request that Hornsea Three provide information on "in principle" compensation measures means that currently the requirements for appropriate legal and financial security for any agreed compensation cannot be met. Therefore, consent should not be granted until this requirement is met. The length of time the compensation measures should be secured for must be based on the combination of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts. This can be determined by appropriate population modelling. Notwithstanding our views on the appropriateness of invasive mammalian predator eradication and biosecurity as compensation measures at this time, we consider that any formal proposal for such measures must be secured prior to DCO consent being granted. There are various ways in which this could be achieved: - The RSPB's preferred option would be that the proposals are subject to formal consenting and impact assessment processes and included within the DCO consent examination and therefore prior to any decision being made. This is the most secure as it would enable both the DCO examination and decision to fully take account of the legal and financial guarantees relating to the compensation; - The DCO consent includes conditions that development cannot commence until the compensation measures have been consented and implemented to an agreed timetable. This is less ideal as although the conditions will ensure delivery the proposals are not able to be scrutinised by those involved in the examination process and securing them may lead to delays for the developers.
SUMMARY and RECOMMENDATION	Subject to an evidence review and research demonstrating kittiwakes will benefit from this measure, based on the RSPB's experience of invasive mammalian predator eradication schemes, our summary view is that: - A full-scale feasibility study is required: o by a suitable eradication expert contractor against the relevant criteria e.g. the 7 feasibility criteria set out in Table 1 on page 18 of the Manual of the UK Rodent Eradication Best Practice Toolkit (2018)[93]; o must be carried out before DCO consent is granted to be sure of any "reasonable guarantee of success", any feasibility study; o Any biosecurity measures must be secured in perpetuity; - This must take full account of known constraints e.g. availability of a suitable eradication expert contractor, securing acceptability on political/legal, social and environmental grounds, timescales for ground-truthing and planning.

[93] See: http://www.nonnativespecies.org/index.cfm?pageid=613

EC criteria/additional consideration	RSPB comment
	However, use of invasive mammalian predator eradication to benefit breeding kittiwakes with a reasonable guarantee of success is unproven and would be experimental. We consider the evidence is weak that kittiwakes are particularly susceptible to mammalian predation. As with artificial nest structures (Norfolk Vanguard) a significant amount of evidence review and research is required to determine whether or not this method could be used as a compensation measure with a reasonable guarantee of success. Therefore, we **recommend** that the Secretary of State pauses any decision on whether or not to consent the schemes and establishes an Expert Working Group to report to the Secretary of State in advance of any consent being granted. Its purpose would be to advise the Secretary of State on whether there are any viable and sufficiently proven compensation measures with a reasonable guarantee of success and the steps necessary to secure such measures. This would ensure the Secretary of State could take an informed decision on whether consent could be granted on the basis that compensation measures with a reasonable guarantee of success had been secured. The Expert Working Group should be charged with carrying out a detailed review of options for compensatory measures and to make recommendations to the Secretary of State. It should identify, if possible, the most appropriate measures with a reasonable guarantee of success and identify the steps needed by an applicant to secure those measures, including the appropriate legal and financial guarantees, as well as details on implementation, management and monitoring, including the requirement for alternative, additional measures be provided should initial measures fail (the feedback loop mechanism). Among other things, in relation to each species it should review the best available science in order to: - agree a method for converting annual collision risks in to appropriate compensation objectives. This will ensure the compensation requirements for any scheme are calculated fairly; - Agree the length of time the compensation measure should be secured for, using appropriate population modelling (based on the combination of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts); - carry out a comprehensive review of the potential measures to meet those objectives and identify those that have the best potential to succeed; - identify any critical gaps in knowledge on the likely success of those measures and to assess the level of uncertainty and risk associated with each; - determine what work is necessary to address those gaps in order to identify those measures that could have a reasonable guarantee of success and over what timescales that work would need to be carried out before consent could be granted; - determine whether / where food supply is sufficient that additional safe nesting areas (provided either through artificial structures or predator eradication) might feasibly benefit the kittiwake population. - to report to the Secretary of State on its findings and recommendations.

The RSPB's detailed comments on the preferred kittiwake compensation measure of Norfolk Vanguard

192. Norfolk Vanguard's preferred compensation measure can be summarised as:

- Provision of an artificial nesting structure for the duration of the operation of the wind farm.
- Consult with Natural England and secure construction of offshore artificial nest site to be constructed and available for use prior to first operation of any wind turbine.
- Possible options include:
    - Simple wall adjacent to the sea;
    - Artificial site provided at sea, close to their preferred foraging area e.g. an existing gas platform, offshore electrical platform. Preference for steel structure with narrow ledges as unsuited to large gulls.
- Likely to be constructed within existing offshore Order limits for the Norfolk Vanguard project, subject to confirmation of final turbine layout.
- A higher number of sites required if located closer to turbines. Aim for provision that exceeds likely losses due to collision mortality;
- Acknowledges it is dependent on access to good food supplies, which in turn is dependent on how the sandeel stock is managed.
- If site created away from existing colonies, use model kittiwakes and playback of kittiwake colony sounds to help facilitate colonisation.
- Monitor nests and breeding productivity.
- If monitoring indicates measure not meeting required level of compensation, then efforts to improve availability of prey stocks could be taken forward.
- Consent for structure would be outside DCO through a separate Marine Licence. Timing of consent could be in parallel to DCO.
- Details (design, location, number, monitoring and reporting proposals) to be submitted to Secretary of State for written approval no later than 12 months prior to commencement of any offshore works. Must be implemented and suitable for use prior to first operation of any wind turbine (unless otherwise approved by Secretary of State).

193. In Table 8 below, we review the compensation measure against the EC criteria set out in Table 5 above and some additional considerations.

Table 8: RSPB review of Norfolk Vanguard kittiwake compensation measures: artificial nesting structure

EC criteria/additional consideration	RSPB comment
Additionality	If successful, the measure would be additional to other measures already required under Article 6 as it is not currently a necessary conservation measure. However, there is little empirical evidence to have confidence that the creation of a de nouveau artificial nesting structure within the limits of an operation wind farm will successfully attract and continue to support breeding kittiwakes. Norfolk Vanguard tacitly acknowledge two key difficulties: - **Food supply**: locating the structure in a part of the North Sea with acknowledged poor food supply and where the measures necessary to address this issue are outside the developer's control; - **Vulnerability to collision risk**: proximity to the Norfolk Vanguard and other wind farms. This is acknowledged through the claimed and speculative over-compensation which would need to be tested and verified through appropriate population modelling.
Targeted	The measure is targeted at breeding kittiwakes. However, the two key difficulties referred to above highlight weaknesses in respect of whether the measure addresses fully the ecological functions and processes required for successful breeding.
Effective	As noted by Hornsea Three's review of this type of measure, there is little scientific evidence on how to successfully create and implement artificial nesting structures for kittiwakes, especially at sea. This is essential to understand what factors will help ensure success. Therefore, this measure must be regarded as experimental at this time. The experimental nature of the measure is reinforced by the proposal to use model kittiwakes and playback of kittiwake colony sounds to help facilitate colonisation. The RSPB would expect to see scientific evidence that such measures have been successfully used to attract and retain breeding kittiwakes to artificial structures, especially at sea.
Technical feasibility	The RSPB accepts that construction of an artificial nesting structure per se is likely to be technically feasible. However, for the reasons set out elsewhere in this table, there remain serious doubts as to the scientific evidence that such a structure would have a reasonable guarantee of success. Further work/research is required to understand, among other things: - The key factors which determine which artificial structures are colonised by breeding kittiwakes, including the relative importance of proximity to existing colonies and the relationship with their population dynamics; - Population modelling to estimate the impacts of locating such a structure: o in relatively close proximity to offshore wind farms; o in a part of the southern North Sea with inadequate food supply

EC criteria/additional consideration	RSPB comment
Extent	Notwithstanding our concerns as to the efficacy of this measure, to determine the extent requires further work to convert the level of cumulative collision risk triggering adverse effect in to appropriate compensation objectives, with particular reference to the total population required, its realistic productivity and survival rates and the growth curve to achieve that population. This in turn would need to take account of the impacts on productivity identified by the applicant on: - collision risk mortality; and - food supply. This should be carried out for a variety of locations around the UK coast to identify locations with the greatest chance of success, not just those within the applicant's offshore Order limits (see Location below). Norfolk Vanguard Habitats Regulations Derogation Appendix 1, paragraph 87, proposes aiming for a colony of 200 pairs achieving a breeding success of 1 chick per breeding pair. This is almost double the current productivity rate at the Flamborough and Filey Coast in recent years (e.g. 0.55 fledglings per breeding pair in 2019; Lloyd et al 2019).[94] There is no evidence presented to suggest that food supplies in the Southern North Sea are currently sufficient to achieve the level of productivity suggested by Norfolk Vanguard. The same paragraph suggests that if 200 fledglings are produced per year, about 100 might survive to become breeding adults, based on survival rates for first-year and older birds taken from colonies across the UK, and from studies that have mostly been conducted prior to large-scale offshore wind farm development (Horswill & Robinson 2015, as quoted in paragraph 83). It seems likely that survival rates would be lower than these average, historical rates in an area with a large number of wind turbines.
Location	Norfolk Vanguard has suggested that the artificial structure be located within its offshore Order limits. The RSPB's initial view is that this is high risk for the reasons identified by Norfolk Vanguard i.e. it is: - in relatively close proximity to offshore wind farms; - in a part of the southern North Sea with inadequate food supply As with our comments on Hornsea Three's island eradication programme, we recommend that an expert working group is established to review the evidence on potential measures with the aim of reporting to the Secretary of State on its findings and recommendations. Need a standard conclusion that binds this to the timing of consent
Timing	The RSPB welcomes Norfolk Vanguard's commitment to ensure the artificial nest site to be constructed and available for use prior to first operation of any wind turbine. This would be welcome if this was a proven method for supplying additional nesting capacity for kittiwakes. However, the experimental nature of the measure means there is no guarantee of successful colonisation and thereby the cumulative adverse

[94] Lloyd, I., Aitken, D., Wildi, J and O'Hara, D. (2019) *Flamborough and Filey Coast SPA Seabird Monitoring Programme. 2019 Report.* RSPB Report.

EC criteria/additional consideration	RSPB comment
	effect predicted may not be offset. There remains a high risk that the structure could fail to attract any breeding kittiwakes.
Long-term implementation	BEIS's request that Norfolk Vanguard provide information on "in principle" compensation measures means that currently the requirements for appropriate legal and financial security for any agreed compensation cannot be met. Therefore, consent should not be granted until this requirement is met. The length of time the compensation measures should be secured for must be based on the combination of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts. This can be determined by appropriate population modelling. Notwithstanding our views on the appropriateness of artificial nesting structures as compensation measures at this time, we consider that any formal proposal for such measures must be secured prior to DCO consent being granted. There are various ways in which this could be achieved: - The RSPB's preferred option would be that the proposals are subject to formal consenting and impact assessment processes and included within the DCO consent examination and therefore prior to any decision being made. This is the most secure as it would enable both the DCO examination and decision to fully take account of the legal and financial guarantees relating to the compensation; - The DCO consent includes conditions that development cannot commence until the compensation measures have been consented and implemented to an agreed timetable. This is less ideal as although the conditions will ensure delivery the proposals are not able to be scrutinised by those involved in the examination process and securing them may lead to delays for the developers.
SUMMARY and RECOMMENDATION	The ability to create successful artificial nesting structures for kittiwakes with a reasonable guarantee of success is unproven and would be experimental. In addition, the offshore location selected by Norfolk Vanguard comes with additional risks (poor food supply, collision risk). Therefore, we **recommend** that the Secretary of State pauses any decision on whether or not to consent the schemes and establishes an Expert Working Group to report to the Secretary of State in advance of any consent being granted. Its purpose would be to advise the Secretary of State on whether there are any viable and sufficiently proven compensation measures with a reasonable guarantee of success and the steps necessary to secure such measures. This would ensure the Secretary of State could take an informed decision on whether consent could be granted on the basis that compensation measures with a reasonable guarantee of success had been secured. The Expert Working Group should be charged with carrying out a detailed review of options for compensatory measures and to make recommendations to the Secretary of State. It should identify, if possible, the most appropriate measure(s) with a reasonable guarantee of success and identify the steps needed by an applicant to secure those measures, including the appropriate legal and financial guarantees, as well as details on implementation, management and monitoring, including the requirement

EC criteria/additional consideration	RSPB comment
	for alternative, additional measures be provided should initial measures fail (the feedback loop mechanism). Among other things, in relation to each species it should review the best available science in order to: - agree a method for converting annual collision risks in to appropriate compensation objectives. This will ensure the compensation requirements for any scheme are calculated fairly; - Agree the length of time the compensation measure should be secured for, using appropriate population modelling (based on the combination of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts); - carry out a comprehensive review of the potential measures to meet those objectives and identify those that have the best potential to succeed; - identify any critical gaps in knowledge on the likely success of those measures and to assess the level of uncertainty and risk associated with each; - determine what work is necessary to address those gaps in order to identify those measures that could have a reasonable guarantee of success and over what timescales that work would need to be carried out before consent could be granted; - determine whether / where food supply is sufficient that additional safe nesting areas (provided either through artificial structures or predator eradication) might feasibly benefit the kittiwake population. - to report to the Secretary of State on its findings and recommendations.

The RSPB's overall conclusions on proposed kittiwake compensation measures

194. The RSPB welcomes the work carried out by both Hornsea Three and Norfolk Vanguard to identify potential compensation measures to address the predicted in-combination adverse effects on breeding kittiwakes from the FFC SPA. For reasons each has set out, devising a compensation measure for breeding kittiwakes with a "reasonable guarantee of success" is highly problematic.

195. At this point in time, it is the RSPB's conclusion that neither Hornsea Three or Norfolk Vanguard have established that their preferred option meets the necessary standards and evidence base to be considered a compensation measure that has a "reasonable guarantee of success". Each has its difficulties which, in summary, are:

- Hornsea Three: the available evidence suggests predation by mammals is rare and there is little or no empirical evidence that kittiwakes are at significant risk from invasive mammalian predation. Further evidence review and research is required to demonstrate kittiwakes would benefit from invasive mammalian predator eradication.

- Norfolk Vanguard: little or no evidence to demonstrate that creation of a de nouveau artificial nesting structure will successfully attract and sustain a population of breeding kittiwakes. In addition, the RSPB is concerned that the proposal to locate the structure in the southern North Sea within its offshore Order limits exposes any birds that do colonise the structure to two known negative pressures: poor food availability and collision risk, thereby undermining the measure from the outset. Any proposal to over-compensate to address these issues should only be taken seriously on the basis of a fuller understanding of the implications of each pressure on the likely outcome, including appropriate population modelling.

196. Therefore, the RSPB concludes that neither Hornsea Three nor Norfolk Vanguard have presented a compensation measures for kittiwake that:

- Has a reasonable guarantee of success based on the best scientific knowledge;
- Would be secured (legally, financially and technically) in advance of consent being granted;
- Would ensure the overall coherence of the Natura 2000 network was protected.

197. We set out our overall recommendation on all the compensation measures in the conclusions section below.

LBBG compensation proposals by Norfolk Vanguard

198. As with kittiwake, Norfolk Vanguard used Furness et al (2013) as their starting point for consideration of potential compensation measures to improve productivity of breeding LBBGs. Table 9 below summarises their conclusions on the most appropriate measure to take forward and provides RSPB comments.

Table 9: summary of conclusions on potential LBBG compensation measures considered by Norfolk Vanguard with RSPB comments

Potential compensation measure	Norfolk Vanguard conclusions	RSPB comments
Measures in Furness et al (2013)		
Predator control		
- *Mink eradication*	Not addressed.	
- *Fencing out foxes*	☑ Fox predation considered to be a cause of decline in Alde-Ore Estuary SPA LBBG population. In UK, some examples of electric fences to exclude foxes from colonies have been partially successful. Electric fences are not fully effective and need frequent maintenance. Consider would be highly effective measure, but important to collate available evidence at the site to confirm poor breeding success related primarily to mammalian predation.	Agree that work to obtain evidence to explain declines of LBBG colony at Orfordness is required. RSPB research has identified several potential contributory factors, including fox predation. However, this is a site management measure necessary to restore the population to favourable status, not a compensation measure (see detailed comments below).
- *Rat eradication*	☒ Little evidence relating to rats as predators at Alde-Ore Estuary SPA LBBG colonies.	Agree.
End culling	☒ Ruled out following Defra change to law that means culling under General Licence no longer permissible. Also, no culling takes place at Alde-Ore Estuary. Not clear how reduced culling elsewhere would benefit the Alde-Ore Estuary SPA.	Agree.
Closure of sandeel and sprat fisheries in UK waters	☒ Studies suggest sandeels not an important component of diet. Therefore, unlikely to represent a strong compensation measure. Main sandeel fishery (Dogger Bank) not in foraging range of Alde-Ore Estuary LBBGs.	Agree.
Measures not in Furness et al (2013)		
Contribute to a strategic fund	☑ Alternative longer-term option: contribute to strategic fund administered by appropriate body. Contributions (proportionate to impact) would be used to compensate for impacts on the SPA population.	Compensation measures not identified, therefore not secured. If suitable compensation measures identified, secured and successfully implemented, may be worth consideration but would need fully worked up details on legal, financial and ecological components and how it would be administered to guard

Potential compensation measure	Norfolk Vanguard conclusions	RSPB comments
		against failure of any of those components. This includes securing agreement with landowners willing to have the measures carried out on their land. We note this fundamental barrier has not been solved by the Galloper Mitigation Fund to date.

RSPB detailed comments on Norfolk Vanguard's preferred compensation measure

199. Norfolk Vanguard's preferred compensation measure can be summarised as a phased approach to deliver improved breeding productivity of LBBG at the Alde-Ore Estuary SPA:

- Its preferred option is creation of a predator-proof fenced area within the Alde-Ore Estuary SPA. However, it recognises other measures need to be considered and proposes the following approach:
  - Establish a working group to review evidence and agree the most appropriate measures to take forward following a scoping study;
  - Delivery measures implemented based on outcomes of scoping study following approval by the Secretary of State.
- It also suggests an alternative measure of financial contributions to a strategic compensation fund.

200. In Table 10 below, we review the compensation measure against the EC criteria set out in Table 5 above and some additional considerations. We focus on preferred option of creation of a predator-proof fence within the Alde-Ore Estuary SPA.

201. We need to correct an error in Norfolk Vanguard's understanding of the RSPB's Havergate Island reserve. While historically it supported breeding avocets and other SPA species, management in the last ten years or so has focused on providing a suitable environment for breeding LBBGs. This follows their growing colonisation of the reserve since around 2007 (see Figure 2 in the RSPB's Consultation 1 submission for Norfolk Vanguard). The RSPB has separately created habitat for breeding avocets on the nearby mainland.

Table 10: RSPB review of Norfolk Vanguard LBBG compensation measures

EC criteria/additional consideration	RSPB comment
Additionality	We welcome recognition by Norfolk Vanguard that "*Recovery of that* [LBBG] *population requires much stronger management action than has been taken up to now…*".[95] Unfortunately for Norfolk Vanguard, improving breeding productivity within the Alde-Ore Estuary SPA in the way they have described is not additional to existing necessary site management measures to restore the colony to favourable status e.g. as identified in Natural England's site improvement plan. Therefore, it should not be considered a valid compensation measure. Fox control is already being carried out on part of the SPA, but is of uncertain benefit (see **Effective** below). Any compensatory measure would need to demonstrate it was over and above those measures already identified as necessary to meet the site's conservation objectives.
Targeted	Proposed measure correctly identifies the need to target breeding productivity of LBBG. Based on the historic research and the RSPB's knowledge of the Havergate Island colony, there remains uncertainty over the most significant causes of the colony decline and its failure to recover fully. As set out in section 3 above, further research is needed to identify the most effective site management measures to restore the colony in line with the SPA site conservation objectives, with particular focus on predation, habitat quality, flooding and disturbance. Given the length of time this species takes to reach breeding age it will be several years (at least four) before there can be an indication of whether any measures may be contributing to the restoration of the colony.
Effective	Compensation measures will need to meet the ecological requirements of a successful breeding LBBG colony (see para 183 and Annex B) in respect of: providing high quality nest sites that are predator free, disturbance free and have access to a variety of food resources. In respect of the proposed compensation measures (located within the SPA) there is currently an insufficient evidence base upon which to identify compensation measures that would (i) be additional to the necessary site management requirements and (ii) have a reasonable guarantee of success. This is evidenced by the difficulty experienced in proposing measures suitable for funding through the "Galloper Mitigation Fund". This also reinforces our view that the concept of a strategic fund is inappropriate at this time given that no compensation measures have been identified that could be relied upon.
Technical feasibility	Notwithstanding our serious concerns with the validity of the proposal as compensation, the RSPB welcomes the proposed approach to convene a

[95] Norfolk Vanguard *Habitats Regulations Derogation, Provision of Evidence. Appendix 2: Alde-Ore Estuary SPA – In Principle Compensation Measures for lesser black-backed gull.* Para 62.

EC criteria/additional consideration	RSPB comment
	Working Group to agree the most appropriate measure(s) with a reasonable guarantee of success. However, this work should be carried out before consent is granted to identify, agree and then secure the most effective option with the greatest chance of success. **Comments on fencing** The RSPB has significant experience of predator-exclusion fencing in the UK (>40 significant areas of fencing ranging from 10 ha to over 100ha). Based on this experience, our summary comments on the technical feasibility of the proposed fencing are: - A detailed review of the threats to be addressed at the chosen location is critical. This will determine the detailed aims, objectives and specification in respect of: design, siting, area to be enclosed, and associated capital and maintenance costs, and an assessment of the likely effectiveness of the fencing. - This should inform an appropriate impact assessment of the proposed fence on protected wildlife and other constraints (see **Long-term implications** below). - The fencing costs set out appear to the RSPB to be at the high end of what might prove technically feasible and effective. However, the costs should be dictated by the final agreed specification following the detailed review described above.
Extent	Norfolk Vanguard base their area calculations on an assumption that LBBG nest density at the SPA probably averages less than 1 pair/m^2. Unfortunately, this is a gross over-estimate based on the RSPB's Havergate Island experience. Breeding densities range from approximately 0.005 pairs/m^2 (or 200 pairs in 4ha) in good quality habitat (Doveys) to approximately 0.002 pairs/m^2 across 100ha of mixed habitat currently used by c.1500-2000 pairs of LBBG across Havergate Island as a whole. Notwithstanding our concerns as to the appropriateness of this measure, to determine the extent requires further work to convert the level of cumulative collision risk triggering adverse effect in to appropriate compensation objectives, with particular reference to the total population required, its realistic productivity and survival rates and the growth curve to achieve that population. This in turn would need to take account of the impacts on productivity including: - collision risk mortality; and - food supply.
Location	For the reasons set out elsewhere in this table, the RSPB does not consider location within the SPA can be considered to be compensation. Therefore, further consideration is required of the feasibility of off-site measures using the search hierarchy set out in the EC guidance. Based on the RSPB's knowledge of LBBGs, this may require consideration of locations outside the immediate environs of the Alde-Ore Estuary. This should consider the feasibility of: - Creating new habitat to support breeding LBBG outside the existing LBBG protected area network; - Measures to increase the population of a large colony not protected by the existing LBBG protected area network.

EC criteria/additional consideration	RSPB comment
Timing	Norfolk Vanguard propose that post-consent: - They would prepare an LBBG Compensation Strategy based on the findings of a Working Group. This would include timescales for delivery, and monitoring and reporting proposals. - The Strategy would be submitted to the Secretary of State for approval no later than 12 months prior to commencement of any offshore works and approved by the Secretary of State prior to commencement of those works. - They note that it may not be possible to achieve all steps prior to wind farm operation. The RSPB's recommendation (as set out below) is that the detailed compensation requirements are identified, agreed and secured **before** consent is granted. Notwithstanding our considered view that the current proposals do not comprise compensation measures, it is essential that the Secretary of State only consents to a compensation package that: - Has a reasonable guarantee of success in meeting its objectives to protect the overall coherence of the Natura 2000; - Has been secured in legal and financial terms, including any necessary additional legal consents and land tenure. Without these, the Secretary of State cannot be confident that the compensation measures would not fail due to legal or financial barriers. - Is capable of being implemented and fully functional before the wind farm becomes operational. For the reasons set out elsewhere in this table (and summarised below), the RSPB considers there is a significant amount of work to be done before the Secretary of State could be confident that such a compensation package is available and has been secured.
Long-term implementation	BEIS's request that Norfolk Vanguard provide information on "in principle" compensation measures means that currently the requirements for appropriate legal and financial security for any agreed compensation cannot yet be met. Therefore, consent should not be granted until this requirement is met. The length of time the compensation measure should be secured for must be based on the combination of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts. This can be determined by appropriate population modelling. Notwithstanding our views on the appropriateness of predator-exclusion fencing as a compensation measure within the SPA, there are several important constraints to the installation of a 2m high predator fence on Orfordness that BEIS needs to be aware of as they could fundamentally affect the viability of the proposal. The constraints include: archaeology (part is a Scheduled Monument), landscape impacts (it is within an AONB), unexploded ordinance, and the presence of SAC vegetated shingle. Notwithstanding our views on the appropriateness of the compensation measures at this time, we consider that any formal proposal for such measures must be secured prior to DCO consent being granted. There are various ways in which this could be achieved:

EC criteria/additional consideration	RSPB comment
	- The RSPB's preferred option would be that the proposals are subject to formal consenting and impact assessment processes and included within the DCO consent examination and therefore prior to any decision being made. This is the most secure as it would enable both the DCO examination and decision to fully take account of the legal and financial guarantees relating to the compensation; - The DCO consent includes conditions that development cannot commence until the compensation measures have been consented and implemented to an agreed timetable. This is less ideal as although the conditions will ensure delivery the proposals are not able to be scrutinised by those involved in the examination process and securing them may lead to delays for the developers.
SUMMARY and RECOMMENDATIONS	The basic challenges with proposing compensation **within** the Alde-Ore Estuary SPA are: - It would not be additional to measures already necessary to restore the LBBG population to favourable status; - There is scientific uncertainty as to the effectiveness of the measures. Further research is required to test the most likely measures; - It would be necessary to show how any compensatory measures within the SPA are genuinely additional to site management. Therefore, at this point in time, it would not meet either EC or Defra guidance on compensatory measures. Therefore, as with kittiwakes, we **recommend** that the Secretary of State pauses any decision on whether or not to consent the schemes and establishes an Expert Working Group to report to the Secretary of State in advance of any consent being granted. Its purpose would be to advise the Secretary of State on whether there are any viable and sufficiently proven compensation measures with a reasonable guarantee of success and the steps necessary to secure such measures. This would ensure the Secretary of State could take an informed decision on whether consent could be granted on the basis that compensation measures with a reasonable guarantee of success had been secured. The Expert Working Group should be charged with carrying out a detailed review of options for compensatory measures and to make recommendations to the Secretary of State. It should identify, if possible, the most appropriate measure(s) with a reasonable guarantee of success and identify the steps needed by an applicant to secure those measures, including the appropriate legal and financial guarantees, as well as details on implementation, management and monitoring , including the requirement for alternative, additional measures be provided should initial measures fail (the feedback loop mechanism). Among other things, in relation to each species it should review the best available science in order to: - agree a method for converting annual collision risks in to appropriate compensation objectives. This will ensure the compensation requirements for any scheme are calculated fairly; - Agree the length of time the compensation measure should be secured for, using appropriate population modelling (based on the combination

EC criteria/additional consideration	RSPB comment
	of the lifetime of the development ***plus*** the time it will take the affected seabird population to recover from the impacts); - carry out a comprehensive review of the potential measures to meet those objectives and identify those that have the best potential to succeed; - identify any critical gaps in knowledge on the likely success of those measures and to assess the level of uncertainty and risk associated with each; - determine what work is necessary to address those gaps in order to identify those measures that could have a reasonable guarantee of success and over what timescales that work would need to be carried out before consent could be granted; - determine whether / where food supply is sufficient that additional safe nesting areas might feasibly benefit the LBBG population; - to report to the Secretary of State on its findings and recommendations. Specifically, in relation to LBBG compensation, as part of this work, we recommend that detailed consideration be given to off-site compensatory measures using the search hierarchy set out in the EC guidance. Based on the RSPB's knowledge of LBBGs, this may require consideration of locations outside the immediate location of the Alde-Ore Estuary. This should consider the feasibility of: - Creating new habitat to support breeding LBBG outside the existing LBBG protected area network; - Measures to increase the population of a large colony not protected by the existing LBBG protected area network. Measures to increase the population of existing UK LBBG colonies within the protected area network over and above favourable conservation status are unlikely to be available due to the general declines experienced by such large gull colonies. However, it should be considered in a systematic manner if other options are exhausted.

RSPB overall conclusions on proposed LBBG compensation measures

202. As with kittiwakes, the RSPB welcomes the work carried out by Norfolk Vanguard to identify potential compensation measures to address the predicted in-combination adverse effects on breeding LBBGs from the Alde-Ore Estuary SPA. In principle. we support the proposal to carry out a structured review to identify potential compensation measures that would have a "reasonable guarantee of success".

203. However, at this point in time, it is the RSPB's conclusion that Norfolk Vanguard has not established that its preferred option meets the necessary standards and evidence base to be considered a compensation measure that has a "reasonable guarantee of success". In summary, Norfolk Vanguard's preferred option to create a predator fenced area within the Alde-Ore Estuary:

- would not be additional to measures already necessary to restore the LBBG population of the SPA to favourable status;
- There is scientific uncertainty as to the effectiveness of the measures. Further research is required to test the efficacy of the most likely measures;
- It would be necessary to show how any compensatory measures within the SPA are genuinely additional to site management.

204. Therefore, the RSPB concludes that Norfolk Vanguard has not presented an LBBG compensation measure that:

- Has a reasonable guarantee of success based on the best scientific knowledge;
- Would be secured (legally, financially and technically) in advance of consent being granted;
- Would ensure the overall coherence of the Natura 2000 network was protected.

205. We set out our overall recommendation on all the compensation measures in the conclusions section below.

RSPB overall conclusions on proposed compensation measures

206. Based on the detailed comments above, the RSPB's overall conclusions are that neither Hornsea Three nor Norfolk Vanguard have presented compensation measures that:

- Have a reasonable guarantee of success based on the best scientific knowledge;
- Would be secured (legally, financially and technically) in advance of consent being granted;
- Would ensure the overall coherence of the Natura 2000 network was protected.

207. For these reasons, we **recommend** that the Secretary of State pauses any decision on whether or not to consent the schemes and establishes an Expert Working Group to report to the Secretary of State in advance of any consent being granted. Its purpose would be to advise the Secretary of State on whether there are any viable and sufficiently proven compensation measures with a reasonable guarantee of success and the steps necessary to secure such measures. This would ensure the Secretary of State could take an informed decision on whether consent could be granted on the basis that compensation measures with a

reasonable guarantee of success had been secured. The RSPB considers that any formal proposal for compensation measures must be secured prior to DCO consent being granted.

208. The Expert Working Group should be charged with carrying out a detailed review of options for compensatory measures and to make recommendations to the Secretary of State. It should identify, if possible, the most appropriate measures with a reasonable guarantee of success and identify the steps needed by an applicant to secure those measures, including the appropriate legal and financial guarantees, as well as details on implementation, management and monitoring, including the requirement for alternative, additional measures be provided should initial measures fail (the feedback loop mechanism).

209. Among other things, in relation to each species it should review the best available science in order to:

- agree a method for converting annual collision risks in to appropriate compensation objectives. This will ensure the compensation requirements for any scheme are calculated fairly;
- Agree the length of time the compensation measure should be secured for, using appropriate population modelling (based on the combination of the lifetime of the development plus the time it will take the affected seabird population to recover from the impacts);
- carry out a comprehensive review of the potential measures to meet those objectives and identify those that have the best potential to succeed;
- identify any critical gaps in knowledge on the likely success of those measures and to assess the level of uncertainty and risk associated with each;
- determine what work is necessary to address those gaps in order to identify those measures that could have a reasonable guarantee of success and over what timescales that work would need to be carried out before consent could be granted;
- determine whether / where food supply is sufficient that additional safe nesting areas (provided either through artificial structures or predator eradication) might feasibly benefit the kittiwake population.

210. In respect of LBBG, we recommend that detailed consideration be given to off-site compensatory measures using the search hierarchy set out in the EC guidance. Based on the

RSPB's knowledge of LBBGs, this may require consideration of locations outside the immediate location of the Alde-Ore Estuary.

Annex A: A short summary of the main breeding ecology requirements for a successful kittiwake colony

The most oceanic of the UK's gulls, kittiwakes are true seabirds, not normally found inland like other gull species. They usually breed on sheer sea cliffs, where they may form huge colonies alongside other seabirds. Around 8% of the world population breeds in the UK. They forage almost exclusively at sea, and outside the breeding season they are rarely seen in coastal waters. Some UK breeding kittiwakes may range across much of the North Atlantic during the non-breeding period. In recent years, some kittiwakes have bred on man-made structures such as buildings, bridges and piers in coastal locations. Flamborough and Filey Coast is the southernmost SPA kittiwake colony on the North Sea coast of the UK, and one of the largest UK colonies. Kittiwakes are classed as "Vulnerable" worldwide on the IUCN Red List as a result of rapid and continuing population decline (BirdLife International 2020).

Nest sites

- Typically nests on high, steep coastal cliffs with narrow ledges. There are a few instances of nesting on man-made structures such as buildings, bridges, piers and seawalls.
- The nest is a compacted mass of mud, grass and feathers, usually built on a narrow ledge on steep coastal cliffs.

Predators

- Nests are usually on sheer cliffs where they are inaccessible to mammalian predators, though there have been some recorded instances of mammalian predation at kittiwake colonies, presumably where they have nested on shallower slopes that are accessible to mammals.
- Avian predators such as large gulls (e.g. herring gulls *Larus argentatus*, great black-backed gulls *L. marinus*), great skuas *Stercorarius skua*, carrion crows *Corvus corone* and peregrines *Falco peregrinus* can cause localised issues at some kittiwake colonies in some years (Massaro et al. 2001; Votier et al. 2004; Cadiou 2008; Collins et al. 2014). Nests in areas of low nest density, or those nearer the tops of cliffs have been shown to be more vulnerable to avian nest predation (e.g. Massaro et al. 2001), perhaps explaining why kittiwakes usually preferentially nest in the lower sections of cliffs and in large aggregations.

Food availability

- Eats mainly small fish and some marine invertebrates: in British waters, these tend to be energy-rich species such as sandeels and sprats (Varty & Tanner 2009; Mitchell *et al*. 2004). However, it will also feed on discarded offal and/or fish behind fishing boats and in harbours (Varty & Tanner 2009).

- It is a pelagic, surface-feeding species that roams over large areas in search for sparsely distributed patches of food (Varty & Tanner 2009). Recent seabird tracking has shown that kittiwakes breeding at the Flamborough and Filey Coast in 2017 foraged up to 324 km from the nest site, though most foraging trips are shorter, with the average foraging trip in 2017 being to 89 km from the nest site (Wischnewski *et al*. 2018). Other studies have suggested a smaller foraging range (e.g. Thaxter *et al*. 2012). This is likely a combination of data biases due to birds being tracked for a shorter period earlier in the breeding season in previous studies (birds are constrained to shorter foraging trips earlier in the season due to "chick guarding") and the fact that Flamborough and Filey Coast is a large colony where there may be more competition for food (hence birds have to forage more widely) than at other smaller colonies where studies have been conducted.
- Changes in the availability of its key prey species, sandeel, have been linked to climate change and over-fishing in the North Sea (Varty & Tanner 2009). Breeding success and the likelihood of breeding failure have been shown to be negatively affected by high sea surface temperatures, by the presence of an industrial sandeel fishery and by the level of sandeel fishing mortality in preceding years. These factors have been shown to affect sandeel abundance (Frederiksen *et al*. 2004; Cook *et al*. 2014; Paredes *et al*. 2014; Carroll *et al*. 2017).
- Both large spills and ongoing chronic oil pollution are impacting populations of this species (Nikolaeva *et al*. 2006), and may be contributing to reduced prey abundance and poor adult condition resulting in lowered reproductive output. Kittiwakes also suffer a level of bycatch in longline fisheries, especially the Spanish Gran Sol longline fishery (BirdLife International 2015), however, there is more limited evidence of bycatch of kittiwakes in the northern Atlantic.

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Annex B: A short summary of the main breeding ecology requirements for a successful lesser black-backed gull colony

Lesser Black-backed Gulls are adaptable, occupying a variety of natural and urban habitats. Predation and food availability are the key drivers of population changes and distribution. Avoiding predation affects colony location in particular, and perhaps also the habitat selection of the nest site within the colony. Food availability will influence whether breeding takes place (through the condition of the adult female) and is also important in determining the outcome of the breeding attempt. Breeding is often in mixed colonies with Herring Gulls. *Larus fuscus graellsii* is the subspecies present in the UK.

Nest sites

- Nests are generally located on a solid surface, usually on the ground although sometimes on flat or gently sloping roofs, especially those topped with shingle or colonised by lichens and mosses (Rock 2005). Both coastal and inland sites are used.
- Habitat at the nest site can vary from open rock, shingle, bare peat or roof, where nests are very visible, to rank vegetation or even bushes. However, dense vegetation is more usually avoided and areas of taller vegetation within a colony are associated with indicators of lower-quality adults suggesting these are less-preferred areas. The most-preferred breeding sites are open with surrounding vegetation (Kim and Monaghan 2005) which may combine the advantages of an open aspect (visibility of potential predators and a drier, sunnier microclimate) with shelter and hiding-places for the chicks once mobile.
- A successful colony needs to be safe from flooding (climate-change related increases in storm frequency and sea level rise are affecting colonies such as the Ribble Estuary. Gavin Thomas pers. comm.)

Predators

- site selection by Lesser Black-backed Gulls suggests that areas inaccessible to ground predators are particularly important as colony sites e.g. offshore islands, inland freshwater bodies, cliffs, roofs of buildings (Mitchell et al. 2004, Sellers and Shackleton 2011). Foxes caused the abandonment of many coastal colonies on the Dutch coast, driving colonisation of inland sites (Gyimesi et al. 2016). Introduced American Mink *Mustela vison* are considered an important cause of chick mortality (Varty and Tanner 2009b) and illicit an attacking response, indicating a threat to chicks and eggs but not to adults (Clode et al. 2000).

- High productivity is reported from studies of urban-nesting gulls (Rock 2005) where roof top nest sites are likely to be free from most predators (although they may be subject to human interventions).

Food availability

- A generalist and opportunistic feeder, Lesser Black-backed Gulls will forage on fishery discards and at rubbish tips (Gyimesi et al. 2016) as well as crustaceans and molluscs from the intertidal zone (swimming crabs have been found to be an important at some colonies, Schwemmer and Garthe 2005), terrestrial invertebrates including earthworms (Coulson and Coulson 2010) and small mammals (which may be scavenged rather than hunted, Alfarwi pers. comm.; Gyimesi et al. 2016) and birds, especially unfledged chicks of other seabirds (pers. obs). When food availability is low, Lesser Black-backed Gulls will predate chicks of conspecifics (Gareth Fisher pers. comm.).
- There is evidence of individual specialization in the use of different food resources (Tyson et al. 2015) and also of differences between males and females, with the larger males, spending more time offshore and foraging at fishing trawlers (Camphuysen et al. 2015).
- There are reports of increasing numbers of Lesser Black-backed Gulls following tractors, e.g. spreading muck and slurry or cutting silage (Gavin Thomas pers. comm.), while supplementary feeding of livestock also presents an opportunity for gulls. Tracking data shows significant use of open-air pig units in some areas (Aaron Howe pers. comm.).
- Colonies with access to a variety of food resources are more likely to be resilient to short- and long-term changes in accessibility to particular types of food.
- Chicks are preferentially fed high-quality food items such as crustaceans and fish discards, and when access to these is reduced and lower-quality food is fed to chicks, productivity is sometimes seen to be reduced (Perrins and Smith 2000), although other studies have also found good productivity in terrestrially-feeding birds (Gyimesi et al. 2016).
- Lesser Black-backed Gulls have been found to feed more at sea than other sympatric gull species (Kubetzki and Garthe 2003; Kim and Monaghan 2006) and are known to be capable of long foraging flights, tracking data indicating a maximum off-shore foraging distance of 533km (Woodward *et al*., 2019), however time spent away from the colony reduces nest attendance and increases the risk of chicks being predated or chilled (Bukacińska et al. 1996).
- Urban-nesting gulls appear to often forage outside towns, and it appears that for some, landfill sites are an important foraging resource (Rock 2005).
- Botulism, often associated with rubbish tips in warm weather, is not uncommon among Lesser Black-backed Gulls (Mitchell et al. 2004) and is linked to some historic population declines such

as in the Severn Estuary Region in the late 1970s (Rock 2005). Dependence on low quality food resources such as rubbish tips is likely to make populations more vulnerable to this and other toxins.

Disturbance

- Human activity can deter Lesser Black-backed Gulls from using a breeding site, particularly if the presence is persistent or accompanied by destruction of nests and eggs or killing adults (Calladine et al. 2006).
- Exploitation and persecution by humans is thought to have depressed the population historically, until protective legislation was introduced in the 20th century (Mitchell et al. 2004).

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