

Date: 04 April 2011
Our ref: 297741
Your ref: EN010087
20022974



National Infrastructure Planning
Temple Quay House
2 The Square
Bristol, BS1 6PN

Hornbeam House
Crewe Business
Park Electra
Way Crewe
Cheshire CW1
6GJ

BY EMAIL ONLY

T 0300 060 3900

Dear Ms Fernandes

Application by Norfolk Boreas Limited for an Order Granting Development Consent for the Norfolk Boreas Offshore Wind Farm- Rule 6 Letter

Thank you for your consultation on the Rule 6 letter dated 11 October 2019. The following constitutes Natural England's formal statutory response.

Procedural changes

Natural England recognises that there has been changes to the examination time table structure since Norfolk Vanguard examination which may be discussed at the hearing. Similarly Natural England has also reviewed our engagement on Offshore Windfarm (OWF) NSIPs over the last 12 months and have identified some changes that we will be making going forwards. Therefore, please accept this letter as Natural England's comments in relation to contents of the Rule 6 letter and an explanation of how Natural England proposes to provide our statutory advice to the Examining Authority (ExA) during the examination.

Attendance at Preliminary Meeting

Thank you for the invitation to the Preliminary Meeting on the 12 November. Natural England can confirm they will not attend. We hope this letter will suffice in providing our input into the Hearing.

Issue Specific Hearings (ISH)

As issues have not significantly progressed since the submission of our detailed combined Relevant Representation and Written Representation, we will have no new information to discuss and propose not to attend ISH in November (12th, 13th and 14th).

However, given the gravitas of our concerns and the potential for Adverse Effect on Integrity Natural England does intend to attend the ISHs at the end of January (28th, 29th, 30th). We hope other interested parties with similar interests to ours will also be present.

Natural England requests that an agenda with times, themes and areas of discussions is provided by the ExA at least 7 days before the date of all ISHs. Based on our experience from other NSIPs it would be helpful to Natural England and our specialists if the ISH agendas could be focused on specific questions from the ExA. This will enable us to appropriately prepare for the hearing; give due consideration to any issues both internally and externally with the Applicant beforehand; and provide robust evidence-based advice to the ExA. This will reduce the need for further discussion and advice post ISHs, prior to the next Deadline.

The decision on attendance at any subsequent ISH will be based on the outstanding issues, wider resource requirements and ensuring best value. However, Natural England will continue to engage with the Applicant throughout the examination to ensure issues are progressed and wherever possible

resolved.

Statement of Common Ground (SoCG)

Natural England notes the request for the provision of a SoCG by 4 November and have been actively engaging with the Applicant to achieve this, with two separate SoCG (separate ornithology and all other areas). We note that the contents of SoCG will be limited at this time as we are still working on various outstanding issues with the Applicant. Nevertheless, whilst incomplete, we will set out those areas where there is common ground with the Applicant. The SoCG will, necessarily, be subject to change over the course of the examination.

Natural England has also developed its own Risk and Issues log to sit beside the Applicant led SoCG. The updated Risk and Issues log will be provided at all Deadlines, 1-9, as it may be of assistance to the ExA in understanding Natural England's current outstanding issues. The issues log is owned by Natural England and reflects our position. The Risk and Issues log (as submitted 4 November) reflects the issues raised by Natural England at Relevant Representation 31 August. Natural England and the developer have been in discussion as part of the SoCG process and progress has been made on a number of issues, this progress will be reflected in the SoCG and in the updated Risk and Issues log when submitted at Deadline 1.

Natural England note the request for updated SoCG at Deadlines 2 and 6. However, having spoken with the Applicant we do not believe that there will be any changes in our position prior to Deadline 2 and equally it is highly likely that our position will remain unchanged through a substantial part of the examination whilst further project specific work is completed and we understand more of the outcomes from the other projects waiting determination. Therefore, we advise that the development of SoCG should not be to the detriment of the actual resolution of issues during the process and so Natural England is proposing not to issue mid examination SoCG(i.e. Deadlines 2 and 6) but work with the Applicant and submit a final SoCG, once all issues have been either resolved or progressed as far as possible i.e. Deadline 8. However, the regular update and submission of the Risk and Issues Log will assist the ExA to monitor the progress on outstanding issues.

In addition, Natural England is interested to know if this request for early completion of SoCG is an examination specific change in process or if this will be adopted across the wider PINS process. If this is a change to process please can PINS notify stakeholders at the earliest opportunity so we can prepare accordingly.

Examiners Questions

Unless there is a specific question posed by the ExA on other interested parties Relevant or Written Representations Natural England will not provide comment on these Representations.

Response to Deadlines

Throughout the examination it is expected that many documents will be submitted and published on the PINS website. Natural England will check all documents, however, we will only conduct detailed review and provide feedback on documents deemed relevant to our statutory function and the issues we have raised. We will advise the ExA in writing at each Deadline of which documents we have reviewed. If there is a document Natural England has not reviewed that the ExA wishes to have our opinion on then please inform us as soon as possible and we will endeavour to review ahead of the next Deadline or advise which Deadline comments could be expected. Any documents not listed within our Deadline responses should be assumed to have not undergone detailed review by Natural England.

Additionally, if the ExA wishes Natural England to have reviewed specific documents for discussion at the ISH, please advise as early as possible and no later than within the draft agenda which documents you wish to discuss so we can prepare appropriately. This will help ensure best value is obtained by all parties attending the ISH.

Draft Examination Timetable

Natural England has some significant concerns regarding the overlap of the proposed examination timetable with the timetables of various other projects including EA1N and EA2 (Submitted DCO on 25 October), Sizewell C Nuclear Power Station (Submit DCO in February), Hornsea Project 4 (Submit DCO in February) and those yet undetermined projects i.e. Hornsea Project 3 OWF advice request by Business Energy and Industrial Strategy, with a further request expected on Vanguard OWF decision. All of these projects will require specialist time and resources and will affect the in combination advice we provide for this and other projects.

Deadline 2:

Natural England has already provided a detailed combined Relevant Representation and Written Representation (31 August) in order to provide as much information upfront and to front load the process. We will therefore not be submitting a Written Representation at Deadline 2 unless new information has arisen.

Site Visits:

Natural England advises that, while we rarely attend site visits, any access to designated sites will require assent from Natural England under The Wildlife and Countryside Act 1981 (as amended) unless the visits are restricted to public rights of way.

Deadline 4 and 7:

Deadlines 4 and 7 are very soon after ISH, which will only allow a turnaround of 3 to 4 days. Natural England request that there was a greater time period between ISHs and Deadlines, or that extensions can be granted if required.

Deadline 9:

There is currently only a week scheduled between Deadline 8 and Deadline 9. Due to the large volume of documents expected to be submitted at Deadline 8 we would welcome a move of Deadline 9 to 8th May to allow time for review and providing a response.

Introduction of new Deadlines

During previous examinations ExAs have allowed Applicants to submit documents in between Deadlines, effectively introducing additional Deadlines, for example, Thanet OWF and Vanguard OWF had several half deadlines.

Please be advised that we will be working with Applicant in between Deadlines under our Discretionary Advice Service. There is an expectation that the Applicant would then submit documents into examination at the next appropriate Deadline. Half deadlines are not helpful as we are duty bound to review documents submitted at Deadlines, which could create duplication of effort reviewing out of date documents and confuse the process. Should there be documents that the Applicant wants to submit between Deadlines we suggest these are issued at the next appropriate Deadline, and we will respond at the following Deadline, or if time does not allow the subsequent Deadline.

For any queries relating to the content of this letter please contact me using the details provided below.

Yours sincerely,

Tamara Rowson
Norfolk and Suffolk Team
E-mail: tamara.rowson@naturalengland.org.uk
Telephone: [REDACTED]

This section outlines the principal issues that Natural England has with the application. The issues set out below require further work, or clarification, to enable a complete and robust assessment to be undertaken. If the issues are not resolved Natural England will not be able to exclude beyond all reasonable scientific doubt that there will be no adverse effect on the integrity of the relevant SACs and SPAs, having regard to the conservation objectives for those sites. Each issue has been assigned a risk rating and colour coded accordingly, please see Table xxx which sets out Natural England’s categorisation, which has been developed for all our OWF NSIP representations from Section 42 consultations onwards. In the interests of brevity, Natural England has only included issues which are identified as amber risk or higher within their Representations and Risk and Issues Log.

In relation to SACs and SPAs the risk to which Natural England refers to in Table xxxx Issues Log is the risk of the decision-maker proceeding without sufficient information to allow it to be convinced, beyond reasonable scientific doubt, of an absence of adverse effect on the sites concerned. A high risk rating indicates a grave risk of adverse effect(s) unless further information and/or assessment and/or project modifications suffice to dispel scientific doubt. To be clear, Natural England is not ranking these issues in terms of the acceptability of impacts on sites or their features.

Natural England’s Comment	Risk
<p>Purple Note for Examiners and/or competent authority. May relate to DCO/DML</p>	
<p>Red Natural England considers that unless these issues are resolved it will have to advise that (in relation to any one of them, and as appropriate) it is not possible to ascertain that the project will not affect the integrity of an SAC/SPA and/or comply fully with the Environmental Impact Assessment requirements and/or avoid significant adverse effect on landscape/seascape, unless the following are satisfactorily provided: <ul style="list-style-type: none"> new baseline data; significant design changes; and/or significant mitigation; Natural England feels that issues given red status are so complex, or require the provision of so much outstanding information, that they are unlikely to be resolved during examination, and respectfully suggests that they be addressed before hand.</p>	
<p>Amber Natural England considers that if these issues are not addressed or resolved by the end of examination then they would become a Red risk as set out above. Likely to relate to fundamental issues with assessment or methodology which could be rectified; preferably before examination.</p>	
<p>Yellow These are issues/comments where Natural England doesn’t agree with the Applicant’s position or approach. We would flag these at the PEI stage with the view that they would be addressed in the Application. But otherwise we are satisfied for <u>this particular project</u> that it will not make a material difference to our advice or the outcome of the decision-making process. However, it should be noted that this may not be the case for other projects. Therefore it should be noted by interested parties that just because these issues/comments are not raised as part of our Relevant Representations in this instance it should not be understood or inferred that in other cases or circumstances Natural England will take this approach. Furthermore, these may become issues should further evidence be presented.</p>	
<p>Green Natural England supports the Applicant’s approach.</p>	

	<p>This advice differs from that provided to Vanguard as recent evidence, being generated in connection with Triton Knoll ODF, has now demonstrated that micro siting around Annex I reef within inner Dowsing Race Bank and North Ridge SAC is not possible and therefore a risk based decision needs to be made as to whether or not the cable can be installed. Given that there is evidence to demonstrate that there is a higher probability for Vanguard/Boreas to have Annex I Sabellaria spinulosa reef within the cable corridor than at Triton Knoll we advise that an adverse effect, both now and post consent, can't be ruled out. Therefore we advise that alternatives and/or compensation is secured in addition, the evidence presented in the HRA to support conclusions on recoverability relates only to individuals/abundance, but not to reef per se (being the Annex I habitat). Thus we have limited confidence in the ability of reef to recover from cable installation activities. Therefore, we further advocate that the standard mitigation measure of avoidance is achieved to Natural England's consistent advice is that all qualities of reef (from low to high) are protected. Therefore, it is our view that targeting the impact on 'inferior' areas of reef to minimise the significance of the effect is not Habitat Regulations compliant.</p> <p>Furthermore whether reef is avoided or not during installation there does remain a risk during O&M cable remediation activities that reef could establish across the cable corridor. Accordingly, every effort should be made, with input from the MMO and Natural England, to minimise the impacts at the time of undertaking the works.</p>	
	Cable protection within designated sites	
16	In general, Natural England strongly advises against the use of cable protection within designated sites as the addition of hard substrata is often incompatible with the conservation objectives for Annex I sandbanks and reef features. Natural England notes that there is a potential worst case scenario	
	Use of a Site Integrity Plan for benthic issues	
17	The use of a Site Integrity Plan (SIP) for SAC benthic habitat features has only been used previously by Vanguard. We have reviewed our advice with the MMO in light of the Triton Knoll ODF case and we do not believe that SIPs are an appropriate means of avoiding adverse effect on site integrity for benthic issues where a worst case scenario can be determined. In addition they do not enable in-combination assessments with other plans and projects and may therefore restrict other development within the SAC. Therefore, Natural England does not support the use of this Grampian style condition within the Boreas DCO.	
	Please note that unlike with the Southern North Sea SAC where the in-combination assessment is dependent on factors outside the control of the project and there are several options to mitigate the impacts, this is not the case for benthic SACs.	
	Favourable condition status of the reef features of the HHW SAC	
	<u>The HHW SAC features, sandbanks which are slightly covered by sea water all the time and reefs, are both in unfavourable condition (Link to Feature Condition Assessment).</u>	
18	The HHW SAC is under pressure from historic and ongoing activities from proposed offshore wind farm cables plus existing oil and gas pipelines and associated pipeline protection.	
	Cable installation in sandbank sites has been shown to be challenging due to impacts associated with cable installation such as sandwave clearance and use of hard substrate as cable protection. Cabling through this site may be possible if evidence is provided that impacts are short-lived and the feature will recover. Consideration would need to be given as to how sufficient cable burial is achieved without the need for cable protection. Should sandwave clearance be necessary to achieve burial depth and avoid the use of cable protection then, as above, it would need to be demonstrated that impacts are short-lived, the feature can recover, and that dredged material is retained in the system and not deposited on material of the same grain size.	
	Colonisation of foundations / cable protection / scour protection may affect benthic ecology and biodiversity	
19	We agree that potential beneficial effects may occur from introduction of hard substrate into a soft substrate system. However, within MPAs where the features of interest include soft mixed sediments, the establishment of any artificial hard reef on soft/mixed sediments must be considered against the conservation objectives to restore or maintain the features for which the site is designated. As such, any potential benefits from the introduction of hard substrate are outweighed in HHW SAC by the impact that the hard substrate will have on habitat change and the features of the site and the achievement of recovery.	
	Furthermore, any suggestion that the loss of natural Annex I feature is being compensated for by the creation of new artificial reef brings in issues of compensation, and therefore Imperative Reasons of Overriding Public Interest and Article 6.4.	
	Operation and Maintenance Activities	
20	It is the view of Natural England that Operations and Maintenance activities should either be excluded from within this designated site (at the consenting stage) with option to apply for a separate marine licence at a later date) or sufficiently restricted to ensure no adverse effect. This is because repeated O&M activities can result in optimum disturbance which would prevent recovery of Annex I reef, as seen for Race Bank.	
	Marine Mammals (detailed comments in Appendix 3)	
21	As per Natural England's advice on other recent NDF applications, a mechanism needs to be developed by the regulators to ensure continuing adherence to the SAC's thresholds over time. Multiple SIPs will be developed, plans can take place over several years, and new projects can come online during this time. Should potential exceedance of the thresholds occur, a process for dealing with this issue needs to be in place – the affected developers / industries will need to work together with the regulator and SNCRs to prevent adverse effect on the Southern North Sea SAC.	
	Until the mechanism by which the SIPs will be managed, monitored and reviewed is developed, Natural England are unable to advise that this approach is sufficient to address the in-combination impacts and therefore the risk of adverse effect on integrity on the Southern North Sea SAC cannot be fully ruled out. This is not an issue unique to the project and work will need to be undertaken to reduce the noise levels of multiple wind farms potentially constructing at the same time.	
	Onshore works (detailed comments in Appendix 4)	
	Summary of Natural England's Key concerns: Further information required regarding potential HDD effect to River Wensum SAC Inclusion of mitigation for Peaton Great Barn SAC Consultation on Water Crossing Plans Inclusion of mitigation for impacts on Air Quality Impacts on Protected Species Inclusion of mitigation for impacts to Broadland SPA and Ramsar Post construction monitoring	
	Mitigation of impacts to Terrestrial Ecology	
22	Given the number of Horizontal Directional Drilling (HDD) drilling mud breakouts experienced recently during the construction of other wind farms a more thorough HDD methodology should be presented and the potential effects of a drilling break out on designated sites and species assessed as part of the Broadland SPA and Ramsar are currently scoped-out. These sites were scoped in for Vanguard and mitigation agreed and incorporated within the Outline Landscape and Environmental Management Strategy (OLEMS). Natural England advises that these sites are scoped-in and the same mitigation	
23	Mitigation agreed during the Vanguard examination, as detailed within the Code of Construction Practice (CoCP) and OLEMS should be incorporated into the Boreas O&M DCO documents at the earliest opportunity. For example mitigation agreed as part of the Vanguard Examination process for Broadland	
24	There is currently only limited onshore post construction survey or monitoring proposed to ensure protected habitats and species have been successfully reinstated post construction. Within the OLEMS post construction monitoring is currently only proposed for water voles and newts. Natural England advise	
25	There is currently no inclusion of net gain within the proposed project design. We recommend the Applicant incorporate net gain into their design at the earliest opportunity and produce a net gain DCO document. This is required in order to demonstrate how the development will contribute to net gain and contribute a biodiversity legacy to the Norfolk environment.	
	More detail required on the mitigation in relation to HDD	
27	We consider that there is insufficient information to enable us to conclude that the designated site will be safeguarded from impact from HDD during construction.	
	There is insufficient detail in the CoCP for measures to safeguard the designated site in relation HDD drilling mud "breakout" (where the drilling fluid leaves the bore and escapes into the surrounding substrate). This comment relates to crossings of all water dependant designated sites including River Wensum SAC, Norfolk Valley Fens SAC, The Broadas SAC and SSSI sites downstream.	
	The need for a mitigation plan for Peaton Great Barn SAC	
28	We advise that, as a requirement of the development, that prior to removal of hedgerows, a mitigation plan should be drawn up and agreed with Natural England. The plan should include for the improvement of the hedgerows either side of the section to be removed including any gapping up, tree	
	Consultation on Water Crossing Plans	
29	During the Vanguard ODF examination process the Applicant committed to producing site specific water crossing plans on which Natural England would be consulted. Natural England is particularly concerned regarding where the onshore cable route may impact upon water dependant designated sites, such	
	The need for mitigation for impacts on Air Quality	
30	The EIA identified that the development may have in combination air quality impacts on designated sites in proximity to traffic and transport routes, in particular The River Wensum SAC/SSSI and Felbridge Woods SSSI. Natural England advises the Applicant to include commitments within the Outline Traffic	
	Impacts on Protected Species	
31	Natural England has received a draft Great Crested Newt Licence Application and is currently considering issuing a Letter of No Impediment.	
	We advise the Applicant to submit licence applications for protected species as soon as possible.	
	The need for Mitigation for impacts to Onshore Ornithology	
32a	During the Vanguard examination it was noted that the survey data collected for onshore ornithology species was not of sufficient duration and had not been linked to crop rotations so it would not be possible to comment on where Broadland SPA and Ramsar species may be using Functionally Linked Land, during the construction phase and that there could be direct effects on ex situ habitats. The Applicant committed to providing ornithological mitigation in a Clarification Note and the Vanguard OLEMS.	
	These commitments are not reflected in the Boreas documents as submitted, namely the integrity matrices, information to support HRA, Schedule of Mitigation or OLEMS. We advise that these documents are amended to include mitigation as incorporated as part of Vanguard ODF OLEMS (Deadline 9) and submitted as soon as possible during the examination process.	
	Development Consent Order (detailed comments in Appendix 5)	
33	There are several areas of concern where Natural England advises that further clarification is required in order to ensure that the DCO accurately captures the various commitments and parameters of the project that have been agreed through consultation thus far.	
	Many of the volumes assessed in the Environmental Statement project description (disposal, cable protection and scour protection) do not appear to match those used in the DCO/DMs. Clarification should be requested from the Applicant on these issues.	
	Natural England requests that a period of 6 months be allowed for submission, consultation and approval of pre-construction plans.	
	Natural England reiterates its support of the MMO position on the inclusion of appeals process as raised in the Vanguard ODF hearings.	
	Natural England welcomes that decisions made on the DMs have been excluded from the arbitration provision.	

6.1	<p>We therefore advise that the Applicant updates the cumulative/in-combination assessments to take account of the above points. As a result of the above, we are currently unable to make any conclusions regarding the level of cumulative/in-combination operational displacement impact on auk. However, we note that at Vanguard, Natural England was unable to rule out a significant adverse effect for cumulative operational displacement on razorbill or guillemot at the EA scale.</p> <p>Additionally, we note that during the Vanguard examination, Natural England were able to rule out adverse effect on integrity of the FFC SPA due to in-combination operational displacement on the razorbill and guillemot features of the site when Horsa 3 was not included in the in-combination total. However, due to Natural England's significant concerns regarding the incomplete baseline surveys for the Horsa 3 project, and the associated level of uncertainty as regards the potential impacts of that project, Natural England was not in a position to advise that an adverse effect on integrity could be ruled out for the razorbill and guillemot features of the FFC SPA for impacts in combination with other plans and projects when Horsa 3 was included in the in-combination total (see our comments on the Applicant's Deadline 8 updated auk displacement assessment submitted at deadline 8, available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-00190-DU95-20-Natural%20England%20-%20Deadline%208%20Submission.pdf).</p> <p>The Boreas project is adding further birds to these totals.</p> <p>Cumulative and in-combination collision assessments</p> <p>The following wind farm projects are missing from the assessments: Kentish Flats Extension and Methil.</p> <p>Clarification is required as to which set of collision risk figures have been used for Vanguard in the assessments. The figures that should be included are those from the final set of updated figures for the project (i.e. those for the 10MW turbine, revised layouts and raised draught heights and using the full breeding season for gannet, kittiwake and LBBG, as presented in the Applicant's additional submission, MacArthur Green 2019).</p> <p>Clarification is also required as to which set of collision risk figures have been used for Thanet Extension in the assessments. We suggest that the figures included for Thanet Extension are those presented in Table 1 of Appendix 39 of the Deadline 3 submission for this project's examination (available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10084/EN10084-001282-D3_Appendix39_TECW_CRM_Rev3.pdf). The approach taken for all species for the Thanet Extension figures should be consistent (i.e. all the upper figures, or all the central figures in the range presented in Table 1 of Appendix 39 of the Deadline 3 Thanet Extension submission).</p> <p>There are differences in the figures used in the EIA cumulative assessments for Vanguard, Thanet Extension and Moray West to those that are then used in the apportioning to the SPA colonies in the in-combination assessment. The figures used should be consistent in the ES and the HRA reports.</p> <p>As was noted in our Deadline 7 response at Vanguard (see: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-002878-DU76-20-Natural%20England%20-%20Deadline%20Submission.pdf), we suggest that the figures included in the assessments for the Horsa 3 project are those from our Deadline 7 response (Natural England 2019). These figures were used for an illustrative assessment of collision impacts based on the parameter values that were most closely aligned with the approach advised by Natural England. However, it should still be noted that Natural England have highlighted throughout our written and oral submissions for Horsa 3 that the lack of sufficient baseline information for the Horsa 3 June (i.e. the array area) means that there is a considerable degree of uncertainty (and thereby level of risk) associated with these figures and these should not be seen as Natural England's agreed position on the levels of impact from Horsa 3.</p> <p>We would advise the Applicant checks the summing up of the LBBG collisions in the breeding season of the offshore wind farms located within 143km of the Auk-Ore SPA, as Natural England calculates the total for the wind farms and figures currently appear to be 102.4 birds (rather than the Applicant's calculation of 87.2).</p> <p>Natural England also does not consider it is appropriate to apply the 30% calculated by Boreas to apportion figures from the other OWFs within 143km of the Auk-Ore during the breeding season. Natural England notes that a range of approaches have been used to conduct in-combination assessments for OWFs, with applicants applying a blanket apportioning rate across projects out to a certain distance, using the figures from the Environmental Statements (or associated examinations), or using a mixture of values from these two main approaches. Until such time that a robust alternative methodology is agreed, Natural England continues to advise that the figures used in in-combination assessments should be based on the apportionment rates agreed during the assessments of that project. We would welcome further discussions regarding the best approach to in-combination apportioning.</p> <p>We therefore advise that the Applicant updates the cumulative/in-combination assessments to take account of the above points. As a result of the above, we are currently unable to make any conclusions regarding the level of cumulative/in-combination operational displacement impact on any of the relevant species or to the combined impact of gannet cumulative/in-combination displacement plus cumulative/in-combination collision.</p> <p>However, we note that at Vanguard, Natural England was unable to rule out a significant adverse effect for cumulative operational displacement on gannet, kittiwake or GBGG. We were also unable to rule out adverse effect on integrity due to in-combination collision risk on the LBBG feature of the Auk-Ore Estuary SPA or the Kittiwake feature of the FFC SPA (see our Deadline 8 response, available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-00121-D48%20-%20Natural%20England%20-%20Deadline%208%20Submission.pdf).</p> <p>Additionally, we note that during the Vanguard examination, Natural England were able to rule out adverse effect on integrity of the FFC SPA due to in-combination operational displacement plus collision impacts on the gannet feature of the site when Horsa 3 was not included in the in-combination total. However, due to Natural England's significant concerns regarding the incomplete baseline surveys for the Horsa 3 project, and the associated level of uncertainty as regards the potential impacts of that project, Natural England was not in a position to advise that an adverse effect on integrity could be ruled out for the gannet feature of the FFC SPA for impacts in combination with other plans and projects when Horsa 3 was included in the in-combination total (see our Deadline 8 response, available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-00121-D48%20-%20Natural%20England%20-%20Deadline%208%20Submission.pdf).</p> <p>We note that the Boreas project is adding further affected birds to these totals.</p>
6.2	<p>RTD cumulative operational displacement assessment</p> <p>We welcome that all OWFs in the south-west North Sea BDMPS have been considered in the RTD cumulative operational displacement assessment. However, the Applicant has considered that all OWFs at which turbines were installed before or during 2012 form part of the Boreas baseline. Whilst we agree that as Boreas's baseline characterisation survey didn't start until 2016, any displacement effects from OWFs operating at that time would be picked up in Boreas's survey data if the effects from the other wind farms cover the Boreas survey area. However, Natural England does not agree that these wind farms should be considered part of the baseline. This is because, although some of the wind farms included in the Applicant's list have been operational for over 10 years, the RTD population data pre-date the installations (e.g. that used in Furness 2015 to inform the RTD BDMPS comes from a variety of sources including O'Brien et al. 2008, which draws on aerial survey data from 2001-06 and Wetland Bird Survey and county bird records from 1995-2005). Therefore the baseline cannot be assumed to include the effects of these wind farms. In addition, we note that no figures have been included in the cumulative assessment for the East Anglia One North and East Anglia Two projects.</p> <p>In Table 13.41 of the Environmental Statement Chapter many of the OWFs are listed as having no RTD displacement assessments or qualitative assessments with no numbers available. We would therefore recommend that a better approach would be to take the same approach as for auk, i.e. present the seasonal mean peak abundances (as we would assume that even if no RTD displacement assessment was done, the survey data from the relevant Environmental Statements would be available) and then sum figures across the OWFs and put this through the matrix. However, we note that not all round 1 or 2 OWFs may have survey data covering the OWF sites and a 4km buffer and therefore, the data may not be 'like for like' in terms of the survey areas covered.</p> <p>An alternative way of undertaking the cumulative RTD assessment using a 'like for like' approach could be to take a similar approach to that taken by Thanet Extension and was taken by Vanguard during the examination (i.e. the Applicant's Deadline 6 Updated Offshore Ornithology Assessment, MacArthur Green 2019), which used the predicted density map and the underlying dataset of the SeaMAST project (Seabird Mapping and Sensitivity Tool) described in Bradbury et al. (2014) as a common data source of RTD density in the North Sea. The underlying dataset can be accessed from Natural England following a specific data request. This approach is outlined in Annex C of Thanet Extension's Appendix 1, Annexes A to G (Deadline 3 Submission (available from: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10084/EN10084-001076-UpdatedOffshoreOrnithologyAssessment.pdf)).</p> <p>We therefore do not agree that the cumulative RTD operational displacement mortality total combines several sources of precaution, or as the calculated figure does not include estimates of displacement for wider region projects and the calculated total is a massive underestimate of the level of displacement. As highlighted above a method that takes account of the contribution of RTD operational displacement from all projects, whether or not figures have been presented in their Environmental Statements, needs to be brought forward. Therefore, we are currently unable to consider the significance of the cumulative impact from operational displacement until the full extent of displacement from all relevant OWFs.</p> <p>However, we note that at Vanguard, Natural England were unable to rule out a significant adverse effect for cumulative operational displacement on RTD at the EA scale (see our Deadline 7 response, available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-002878-DU76-20-Natural%20England%20-%20Deadline%20Submission.pdf). We note that the Boreas project is adding further affected birds to this total.</p>
6.3	<p>Gannet cumulative and in-combination operational displacement assessment</p> <p>Whilst we agree that the impacts to gannet from operational cumulative displacement at the EA scale is likely to be negligible, we suggest that a similar approach to that undertaken for the auk cumulative displacement assessments is undertaken for gannet, i.e. to sum the bird abundance estimates for each relevant offshore wind farm and put this through a displacement matrix, and then assess with a range of displacement of 0-80% and mortality of 1-10% (as was undertaken by Vanguard during the examination in the Applicant's Deadline 6 Updated Offshore Ornithology Assessment, MacArthur Green 2019), as has been undertaken by the Applicant for in-combination gannet displacement for the FFC SPA.</p>
7	<p>7. Additive impacts (collision plus displacement for gannet)</p> <p>Natural England considers the two impacts of collision and displacement as additive and advises that they should be summed – this is of particular relevance for gannet both for Boreas alone and cumulatively in combination. We welcome that the Applicant has undertaken this assessment for in-combination combined displacement plus collision for the FFC SPA. However, such an assessment should also be undertaken for Boreas alone for both EIA and HRA and also cumulatively at the EA scale.</p> <p>We acknowledge that in summing the predicted mortalities that may arise via these two mechanisms, there is a risk of double counting. This is acknowledged that this simplistic approach will therefore incorporate a degree of precaution. However, the extent of that is hard to gauge given that the predictions of the number of fatalities due to collisions depends critically upon application of an assumed overall avoidance rate (i.e. an assumed percentage of individuals which alter their behaviour to avoid collisions) which in some cases can be considered to incorporate some degree of macro-avoidance of entire wind farms and might otherwise be classed as barrier impacts. The SNCBs are seeking further evidence from ongoing and proposed studies into avoidance rates that will help clarify the relationship between collision risk, displacement and so called 'macro' avoidance.</p>
8	<p>8. Population modelling (EIA and HRA)</p> <p>The significance of the predicted in-combination collision impacts has been considered by reference to various PVA models that are currently in existence. For HRA, the PVA undertaken during the Vanguard OWE examination for LBBG at the Auk-Ore Estuary SPA, and the PVA undertaken during the Horsa 3 OWE examination for gannet and kittiwake at the FFC SPA.</p> <p>For EIA, the national gannet PVA undertaken by the SOSS-04 work (WWT 2012) and the kittiwake and great black-backed gull EIA PVAs undertaken for the East Anglia 3 OWE assessment (EATL 2015 & 2016).</p> <p>We note that Natural England had some outstanding concerns/queries regarding this PVA during the Vanguard Examination (namely regarding the adjustment of the productivity to take account of the proportion of birds that miss breeding each year; and that we were unable to check the baseline growth rate predicted by the model from the outputs of counterfactuals presented, see our Deadline 8 response, available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10079/EN10079-00121-D48%20-%20Natural%20England%20-%20Deadline%20Submission.pdf). We also had outstanding concerns with the Horsa 3 PVAs which were not resolved by the close of the Examination, relating to the number of simulations and the demographic data not being updated (see our Deadline 8 response to the Horsa 3 Examination – written summary of representations of DHS, available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN10080/EN10080-001688-Natural%20England%20-%20Written%20Submission%20to%20Natural%20England%20-%20Representations%20to%20the%20Submission%20to%20the%20Hearing%20on%2020th%20February%202020.pdf).</p> <p>These models nevertheless represent the best available evidence on which to base an assessment, though this should not be taken as a Natural England endorsement or 'acceptance' of the models.</p> <p>The appropriateness of the SOSS gannet PVA and the EIA PVA models for kittiwake and GBGG have been discussed during the Vanguard examination, and has been indicated to Norfolk Boreas. Natural England does not consider that these models are adequate to inform the assessments for Norfolk Boreas for the following reasons:</p> <p>The stochastic simulations were not run as matched pairs. Where stochastic PVA models are used, it is important to use a 'matched-runs' approach where a metric is derived for each matched pair of baseline and impacted simulations (as has been done for the PVAs undertaken during the Horsa 3 and Vanguard examinations for the FFC SPA and Auk-Ore Estuary SPA). Stochasticity is included in the population models, but the survival and productivity rates used for a pair of impacted and unimpacted populations at each time step are the same. This means that the effect that is measured with the metrics can be more directly attributed to the impact, than to model uncertainties such as the variability in the demographic parameters that have been sampled or to observation errors. Cook & Robinson (2017) tested the effect of using unmatched compared to matched runs in PVA models and demonstrated that the median values of several evaluation metrics (e.g. counterfactual of population size) were greater when a matched runs approach was used compared to when the simulations were unmatched and the uncertainty around the metrics was much greater in the unmatched models. Models were run with 1,000 iterations. It may be the case that the median values of the matched versus unmatched runs approach will converge if a larger number of simulations (e.g. 5,000) are used, however the confidence limits are still expected to vary between the two approaches. Natural England therefore advises that one amendment required to the existing PVA models used by Boreas is to run the simulations using matched pairs.</p> <p>Natural England recommends using the counterfactual of population growth rate and the counterfactual of population size to quantify the relative changes in a population in response to anthropogenic impacts. Natural England considers that assessments should focus on the counterfactual of growth rate and the counterfactual of final population size, as these are the two metrics that are, in Natural England's opinion, least sensitive to misspecification of the population trend and demographic rates used in the PVA model. These metrics should be calculated at the end of the impact period. These models do not present outputs for the required metrics.</p> <p>These PVA models used were only run over 25 years and the Boreas project will have a lifespan of a maximum of 30 years. The current approach whereby PVA models are run over 25 rather than 30 years would tend to underestimate of impact, given that if the OWF has an operational period of 30 years, then potential impacts occurring in the last five years of operation are not being accounted for in the models. Therefore, we recommend that these PVAs are revisited.</p>
9	<p>9. Scale of predicted cumulative and in-combination impacts and requirement for mitigation</p> <p>Natural England has previously provided regulators with our advice regarding our concerns about predicted level of cumulative and in-combination impacts on North Sea seabirds:</p> <p>For EIA we have been unable to rule out a significant adverse effect for cumulative operational impacts on:</p> <ul style="list-style-type: none"> - Gannet for cumulative collision plus displacement impacts; - Kittiwake and GBGG for cumulative collision impacts; - Guillemot and razorbill for cumulative displacement impacts; - RTD for cumulative displacement impacts. <p>For HRA we have been unable to rule out adverse effect on integrity for in-combination operational impacts on:</p> <ul style="list-style-type: none"> - LBBG at the Auk-Ore Estuary SPA due to in-combination collision impacts; - Kittiwake at the FFC SPA due to in-combination collision impacts. <p>Additionally for HRA, we have previously (at Vanguard) been able to rule out adverse effect on integrity due to in-combination impacts when Horsa 3 was not included in the in-combination total, but due to Natural England's significant concerns regarding the incomplete baseline surveys for the Horsa 3 project, and the associated level of uncertainty as regards the potential impacts of that project, Natural England was not in a position to advise that an adverse effect on integrity could be ruled out for:</p> <ul style="list-style-type: none"> - Gannet at the FFC SPA due to in-combination collision plus displacement impacts; - Razorbill at the FFC SPA due to in-combination displacement impacts; - Guillemot at the FFC SPA due to in-combination displacement impacts. <p>As noted above, these concerns are likely to only intensify at Boreas given that additional birds are being added to these totals. Three further offshore wind farm NSIPs are due to be submitted to PINS in the next twelve months (East Anglia One North, East Anglia Two, Horsa Four). Natural England therefore considers that without major project-level mitigation being applied to all relevant projects coming forward, there is a significant risk of large-scale impacts on seabird populations.</p> <p>Natural England therefore recommends that the Boreas Applicant (and all relevant future projects located in the North Sea) considers raising turbine draught heights, as has been done by other projects (e.g. Horsa 2, East Anglia 3 and Vanguard), in order to minimise their contribution to the cumulative/in-combination collision totals by as much as is possible.</p>
10	<p>10. Post-construction monitoring</p> <p>We welcome the commitment from the Applicant in the Principle Monitoring Plan regarding offshore ornithological monitoring that the Applicant will engage with stakeholders and that the methodology would be developed through the Ornithological Monitoring Plan (required under Condition 14(1) of Schedule 9 and 10 of the DCO). We agree with the Applicant that the aims of monitoring should be to reduce uncertainty for future impact assessment and address knowledge gaps. Given Natural England's previous advice at recent projects (e.g. Vanguard) regarding our concerns about predicted levels of cumulative and in-combination impacts on North Sea seabirds (see point 9 above), and Boreas' likely contribution to those impacts should it be consented, we consider the aspects that are likely to be relevant for consideration for post consent monitoring are as follows:</p> <p>10 Improving our understanding of collision risk (which could potentially include monitoring of collisions at the site via cameras on turbines, improvements to modelling options for mitigation and reduction);</p> <p>Improving our understanding of displacement (particularly understanding the consequences of displacement);</p> <p>Collection of reliable data on seabird flight heights; and;</p> <p>Colony-based studies (improvements to reference population estimates and evidence for colony phenology and connectivity).</p> <p>Once the final impact figures are agreed, the key issues should be identified and narrowed down so that discussion can be held with relevant stakeholders and the Applicant to identify what may need to be explored further.</p>

Table 3.1	Cable installation in sandbank sites has been shown to be challenging due to impacts associated with cable installation such as sandwave clearance and use of hard substrate as cable protection. Cabling through this site may be possible if evidence is provided that impacts are short-lived and the feature will recover. Consideration would need to be given as to how sufficient cable burial is achieved without the need for cable protection. Should sandwave clearance be necessary to achieve burial depth and avoid the use of cable protection then, as above, it would need to be demonstrated that impacts are short-lived, the feature can recover, material is retained in the system and can be deposited on material of the same grain size.	
Table 3.1	Permanent loss of Annex 1 reef hasn't been assessed because the Applicant considered that reef could recolonise artificial structure. However, Natural England doesn't consider this to be Annex 1 reef - Please see Appendix 2.1	
45	Natural England is concerned that the only form of mitigation for Annex 1 reef i.e. Microtising will not be possible due the presence of Annex 1 reef across the cable corridor. Case example Triton Knoll OWP	
48	Whilst Natural England recognises that a Grampian condition is appropriate, the use of the SIP to remove consideration of adverse effect on integrity at consenting isn't. We would argue that there is a risk to achieving a successful CIO if a CIO is secured then the key milestones are unlikely to be met due to trying to resolve adverse effect on integrity pre construction. It also puts both the MMO and NE under additional and potentially unreasonable pressure to resolve.	
54	Natural England agrees with the Annex 1 survey occurring within 12months of construction, but we recognise that the cable procurement process has happened before this. Therefore how will the Applicant guarantee there is sufficient slack to micro site the cables?	
56	Natural England would welcome further consideration on the significance of small scale impacts to the site and potential (more robust) mitigation measures. As set out previously it is not possible to assess the parameters of 'where possible' under the Habitat Regulations. The Annex 1 reef mitigation is designed to ensure the complete avoidance of an Annex 1 reef (define within a specific area/boundary). Therefore the current SIP is contradictory in places as it is identified that not all impacts will be avoided/fully mitigated. Please note that Natural England is of the view that the project impacts are not de minimis.	
58 - 60	Natural England would argue that it is not just about the maintaining the extent of the feature, but also the form and function. The favourable condition status of the feature will also need to be used to provide the context for any decision making process, both at the consenting and pre construction phase.	
67	The Applicant has committed to having have the 'least effect' on priority areas managed as reef, but there is nothing provided to demonstrated how this will be achieved and to what extent	
71 and 5.2.1	Please see previous comment of the ability to microsite. Natural England notes in Annex 1 of the SIP Annex 1 reef is shown to straddle the length of the cable corridor. Therefore in this scenario mitigation in the form of microtising will not be possible.	
82	Please note that Vanguard has the same issue as NB therefore unlikely to learn from sister project.	
Table 5.1	Natural England Welcomes commitment but it doesn't alter our advice that an adverse effect on integrity can't be ruled out	
85-90	Where will the disposal areas be? How can it be guaranteed that the sediment will remain in the system and that the dredge material will be 95% similar in particle size to disposal locations? Natural England suggest that the SIP should contain criteria that the disposal locations within the SAC should meet to ensure that any sediment will remain within the system, to ensure that the dredge material will be 95% similar in particle size to disposal locations whilst ensure that there is no interaction with Annex 1 reef. Natural England continue to suggest that the disposal volumes should be split according to type of material, for example drill arisings, boulders, sand and mud. This is important because different materials have different impacts and those impacts have been assessed based on maximum volumes as provided in the ES. Also the maximum volumes taken within the Haisborough, Hammond and Winterton SAC should be detailed separately to ensure the impacts to the designated site remain within the impacts assessed. The wording should also limit the area of impact from removal of substances for disposal to the area assessed.	
89	Natural England advises that an in principle sediment disposal strategy should be undertaken and provided as part of the consenting process.	
91-92	Natural England advises that this needs to be updated as there is no qualification as to what is essential and the impacts thereof. It is our view that an adverse effect on integrity can't be ruled out for cable protection at both 5% and 10% of the length within the HNW SAC.	

Yes

No