THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

Dogger Bank South Offshore Wind Farm

Appendix G4 to the Natural England Deadline 4 Submission
Natural England's comments and updated advice on Offshore Ornithology

For:

The construction and operation of the Dogger Bank South (East and West) Offshore Wind Farm located approximately 100-122km off the Northeast Coast in the Southern North Sea.

Planning Inspectorate Reference EN010125

25th April 2025

Appendix G4 – Natural England's Advice on Offshore Ornithology at Deadline 4

Overview

In formulating these comments, the following documents submitted by the Applicant have been considered in relation to the impacts of Dogger Bank South (East and West) Offshore Wind Farm (DBS) on Offshore Ornithology:

- [REP3-032] 13.5 Precaution in the Ornithology Assessment and Implications for Compensation Quantum
- [REP3-027] 13.2 The Applicants' Responses to ExQ1

Whilst recognising that there is inevitable and legitimate debate regarding the best approach to quantifying impacts for which the evidence base is still limited, Natural England consider that the Examination phase of a planning application is not an appropriate forum for constructive discussions on the interpretation of the evidence base and its application in best practice for impact assessment. We note that we have already responded to several of the points made by the Applicant in [REP3-032] in our previous responses, particularly our Response to The Examining Authority's First Written Questions (ExQ1) [REP3-057] and consider it unlikely that further rationale provided on our advice will lead to a material change in the Applicant's position.

However, for the avoidance of doubt, we present a summary in Section 1 below of the sources of uncertainty and justification for our position where the Applicant disputes this. For clarity, we have used the stepwise approach outlined in the Round 4 Kittiwake Strategic Compensation Plan [APP-053] and used by the Applicant. Should the Examiners require any further information to inform their understanding, we would be happy to provide this in response to the next set of Examiner's Questions.

Natural England have provided detailed comments on [REP3-027] in Section 2. Shorter comments (e.g. signposting to future submissions indicated by the Applicant or aspects where our advice remains unchanged) are captured in our Deadline 4 Risk and Issues Log.

1. Precaution in the Ornithology Assessment and Implications for Compensation Quantum [REP3-032]

Natural England are aware of the need to consider the multiple sources of uncertainty appropriately and scientifically within the assessment process and the calculation of compensation quantum and can confirm that this is reflected in our Best Practice and project-

specific advice. We disagree with the Applicant's claims that applying precaution at multiple stages of the process leads to disproportionate requirements for compensation and their position that precaution should be applied only once. Natural England advise that the impact assessment and the compensation calculations represent separate elements of the Habitats Regulation Assessment (HRA) process. Within the impact assessment process, applying an appropriate degree of precaution to each element of uncertainty is required in order to establish an appropriate level of precaution overall when assessing impacts on SPAs. When calculating compensation requirements, the uncertainties in the likelihood of success of the proposed compensation measures must be considered. We highlight that both are required to have the requisite confidence that any proposed compensatory measures will result in the Project's impacts being offset within its lifetime. We note that the Applicant has not made this important distinction consistently. We also highlight that the compensation requirements being large does not mean that they are necessarily inappropriate. However, we reiterate that Natural England has no intention of setting unachievable targets for compensation.

1.1 Step 1 – Calculation of project-level impact

See also Natural England responses to ExQ1[REP3-057] OR.1.3, 1.4

1.1.1 Density and abundance estimates

Density and abundance estimates are generated from digital aerial surveys that provide only a 'snapshot' of the baseline environment. They are temporally restricted in that they are run once a month for two years, which is considered the minimum for assessment purposes (Searle et al 2021[1], SNCBs 2022[2]), and that they are generally only undertaken at certain times of the day and in certain weather conditions. Surveys are therefore unlikely to capture the true variation in bird densities or how this may vary over time. This is a source of uncertainty and potential under-precaution in the assessment – densities may, at any one time, exceed those recorded by baseline surveys.

The use of seasonal mean peak abundances is recommended by the SNCBs (SNCBs 2022[2]) to account for some of this potential under-representation of actual numbers. However, it

[1] Searle, K.R., Jones, E.L., Trinder, M., McGregor, R., Donovan, C., Cook, A., Daunt, F., Humphries, L., Masden, E., McCluskie, A. & Butler, A. 2021. JNCC Report on the Correct treatment of uncertainty in ornithological assessments. JNCC Report No. 677, JNCC, Peterborough, ISSN 0963-8091

[2] SNCBs. 2022. Joint SNCB Interim Displacement Advice Note - Advice on how to present assessment information on the extent and potential consequences of seabird displacement from Offshore Wind Farm (OWF) developments.

should be noted that the seasonal definitions may lead to under- or over-estimation of impacts if they do not adequately characterise periods relating to different behaviours and levels of vulnerability. This is therefore also a source of uncertainty and potential under-precaution in the assessment.

Surveys are also spatially restricted in that they cover only a small proportion of the total survey area – 10% in the case of the Projects [APP-105]. Overall density and abundance estimates for the entire area are based on the results of these sample surveys. The true abundance/density of birds in the area at the time of the survey could (with 95% certainty) lie anywhere within the estimate's 95% confidence intervals. As the Applicant has stated, there is a considerable difference between the mean values and upper 95% confidence intervals in the assessment. This difference results from large confidence intervals that are a function of the lack of precision in the baseline density and abundance estimates (Risk and Issues Log Ref. G58). This is a source of uncertainty and potential under-precaution in the assessment because the mean values are those used to calculate displacement and collision impacts. This is why we advise that the upper 95% confidence interval is used to scale compensation requirements (see Step 2 below for a more detailed rationale).

We note that the uncertainty inherent in the estimation of baseline density and abundance estimates has not been addressed by the Applicant in this document and that this is an important omission when it comes to calculating compensation requirements (see step 3 below).

1.1.2 Displacement impacts

See also Natural England responses to ExQ1[REP3-057] OR.1.3

The Applicant has expressed concerns with respect to the use of the upper 95% confidence interval in the displacement assessment These confidence intervals are a function of the lack of precision in the original baseline abundance estimates (see Section 1.1.1 above), and we would like to clarify that we are not advising the use of the upper 95% confidence interval for the estimation of the Projects' displacement impacts (for which the mean is used), but for the scaling of compensation measures (see Step 2 below).

1.1.2.1 Displacement rates

Evidence on displacement rates is sparse and varied, and the reasons for this variation are poorly understood, which is a source of uncertainty in the assessment. This is why Natural England do not support the use of a single displacement rate and advise considering a range of displacement rates (30%-70% displacement for auks).

We also note that recently published evidence suggests that displacement rates higher than 70% are possible for auks (Lamb et al 2024[3], Peschko et al 2024[4]). As such we do not consider the use of even the upper limit of Natural England's advised range to be over-precautionary. This highlights that the Applicant's approach – and to some extent even Natural England's - is therefore a potential source of under-precaution in the assessment.

1.1.2.2 Mortality rates

Although it is generally acknowledged that displacement may lead to reduced survival, empirical evidence on mortality rates for seabirds is severely limited (Searle et al 2018[5], SNCBs 2022[2]). This is a source of uncertainty in the assessment and is why Natural England do not support the use of a single mortality rate and advise considering a range of displacement rates (1%-10% for auks). Whilst we acknowledge that this range encompasses an extreme worst-case scenario of a 10% mortality rate, we stress this should not be interpreted as Natural England suggesting that a mortality rate of 10% represents the most likely scenario.

We also highlight that the mortality-led approach does not consider the potential effects of displacement on the reproductive success of displaced individuals (Searle et al 2021[1]), which is a potential source of under-precaution in the assessment.

The Applicant continues to advocate for the use of a single displacement rate of 50% and a single mortality rate of 1%, based the results of a 2019 review written for the Norfolk Vanguard offshore wind farm. Our objections to the conclusions of this review were outlined within the Vanguard Examination (PINS ref. EN010079 [REP3-051[6]]). This review was also written prior to the publication of more recent, peer-reviewed evidence (Peschko et al. 2020[7] &2024[4])), and more recent evidence reviews (Lamb et al.2024[3]). We also maintain our position that the Trinder et al (2024) paper cited by the Applicant to support their position does not provide evidence of lower rates of displacement for auks, as this paper is not focused on array-scale

[3] Lamb J., Gulka J., Adams E., Cook A. and Williams K.A. 2024. A synthetic analysis of post-construction displacement and attraction of marine birds at offshore wind energy installations, Environmental Impact Assessment Review, Volume 108

[4] Peschko, V., Schwemmer, H., Mercker, M. et al. 2024. Cumulative effects of offshore wind farms on common guillemots (Uria aalge) in the southern North Sea - climate versus biodiversity? Biodivers Conserv 33, 949–970.

[5] Searle, K.R., Mobbs, D.C., Butler, A., Furness, R.W., Trinder, M.N. and Daunt, F. 2018. Finding out the fate of displaced birds. Scottish Mar. Freshw. Sci, 9, pp.1-161.

[6] https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010079-002568-DL3%20-%20Natural%20England%20-%20Deadline%203%20Submission.pdf

[7] Peschko, V., Mercker, M. and Garthe, S. 2020. Telemetry reveals strong effects of offshore wind farms on behaviour and habitat use of common guillemots (*Uria aalge*) during the breeding season. Marine Biology, 167, 118.

displacement, and we further note that the results are from a single wind farm and may not, therefore, apply to other projects.

Natural England anticipate that the forthcoming ORJIP project ImpUDis (Improving understanding of distributional change for relevant seabird species) will provide a comprehensive overview of auk displacement. Until this project returns evidence which can inform displacement rates of auks, Natural England continue to advise the use of a range-based approach when considering displacement impacts, in terms of both displacement and mortality rates. However, we do generally advise the use of 70% displacement and 2% mortality rates for calculating compensatory requirements for auks, due to the desirability of having clear targets for measures to deliver.

1.1.2.3. Displacement buffer

Displacement effects are understood to occur not only from the array area, but also within the surrounding area, known as the 'buffer'. Evidence on displacement rates in the buffer and on the size of this buffer is sparse and varied, which is a source of uncertainty in the assessment.

The SNCBs recommend the use of a standard displacement buffer of 2km for most species (including auks), in which the same displacement rates as for the array should be applied (SNCBs 2022[2]). Recently published evidence suggests that auk displacement may occur at distances greater than 2km (Peschko et al 2024[4], Lamb et al 2024[3]). Peschko et al (2024)[4] recorded displacement effects on guillemot up to 21km from arrays. This is therefore a potential source of under-precaution in the assessment for these species, and we cannot agree with the Applicant's statement that assessing displacement impacts for the array area plus 2km buffer is a '*worst case assumption*'.

Natural England have previously advised [AS-159] that the Projects should consider likely cumulative displacement impacts on the high densities of auks recorded between the two arrays but outside of the 2km buffer. To date, this has not been included in the assessments submitted, and this omission is consequently a source of under-precaution in the assessment for these species.

1.1.3 Collision impacts

The Applicant's submissions are focused on the use of the 95% confidence intervals arising from Collision Risk Modelling (CRM). These confidence intervals are a function of the lack of precision in the original baseline density (not abundance, as stated by the Applicant) estimates (see 1.1.1 above). We would like to clarify that we are not advising the use of the upper 95%

confidence interval for the estimation of the Projects' collision impacts (for which the mean is used), but for the scaling of compensation measures (see Step 2 below).

1.1.4 Apportioning

See also *Natural England responses to ExQ1[REP3-057] OR.1.4, OR.1.18, and OR.1.39*

1.1.4.1. Proportion of breeding adults

Ideally, the proportion of birds in the survey area that are breeding adults would be determined during the baseline survey process. However, ages of most seabird species are difficult to determine from survey data. This is therefore a source of uncertainty in the assessment. We note that the Applicant advocates for the use of a generalised stable age structure to estimate proportions of adults. Natural England do not accept the use of this method, as it is not based on empirical, site-specific data. Furthermore, the stable age method assumes that seabird populations are stable, and that birds of different age classes are present in the same proportions throughout the population's range, neither of which are likely. For example, ringing data shows immature guillemot and razorbill are more likely to be distributed further away from breeding colonies, being unconstrained by the location of a nesting site (Wernham et al 2002[8]). We do not, therefore, consider that this method is likely to be representative of actual proportions of adults present within the survey area and continue to advise that, in the absence of empirical site-specific evidence to the contrary, all 'adult-type' birds are apportioned as adults.

1.1.4.2. Connectivity with SPA

The proportion of birds within the survey area that are likely to be breeding adults from a particular SPA (e.g. Flamborough and Filey Coast SPA) is based on an assessment of the likely connectivity of this SPA with the survey area. During the breeding season, this is estimated by considering the likely foraging ranges of birds that are constrained in their movements by the location of their nest site. This is a source of uncertainty within the assessment, because empirical data on foraging ranges, usually derived from tracking data, are limited. We note, for example, that no such tracking data is currently available for guillemot and razorbill breeding at FFC SPA. This uncertainty is addressed by applying the mean maximum foraging ranges plus 1 SD (standard deviation) (Woodward et al 2019[9], Woodward et al 2024[10]). The Applicant claims that the mean foraging range is a more representative

[8] Wernham, C. 2002. The Migration Atlas: Movements of the Birds of Britain and Ireland. T. & A.D. Poyser.
[9] Woodward, I., Thaxter, C.B., Owen, E., Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report 724.
[10] Woodward, I. D., Thaxter, C. B., Owen, E., Bolton, M., Ward, R. M., & Cook, A. S. C. P. (2024). The value of seabird foraging ranges as a tool to investigate potential interactions with offshore wind farms. *Ocean and Coastal Management*, **254**, 107192. **https://doi.org/10.1016/j.ocecoaman.2024.107192**

figure, with which we do not agree. The mean maximum plus 1SD is the standard distance advised by SNCB to be used to determine connectivity in the absence of site-specific data, due to the uncertainty that exists within existing datasets.

We note that the Applicant does not dispute our position with respect to apportioning during the guillemot 'non-breeding' and razorbill 'winter' seasons, and we reiterate that this approach may be a source of under-precaution in the current assessment approach, particularly for guillemot, given evidence that FFC SPA birds may not be evenly distributed throughout the North Sea and Channel during this period, but instead may remain closer to their breeding colonies (FBO 2020[11], O'Hara 2025[12]).

We also note that the current definition of the gannet breeding season excludes October (Furness, 2015[13]) and there are often still gannet chicks at FFC SPA in October (Butcher et al 2024[14]). The current apportioning approach is therefore also a potential source of under-precaution in the assessment for this species.

Natural England have responded to the Applicant's statement about how the proportion of FFC SPA guillemot in the Project areas 'seems unrealistic' in detail in our response to the ExA Question OR.1.39 [REP3-057].

1.2 Step 2 – Determining size of compensation population required.

See also Natural England's response to ExQ OR.1.12 and OR.1.18, and Appendix H2 from our Deadline 2 submission [AS-160].

1.2.1 Use of the 95% upper confidence limit

Natural England generally advise that seabird compensatory measures are scaled against the 95% upper confidence limit (UCL) predicted impact value, rather than the central impact value. The confidence intervals of the estimated impact values result from the confidence intervals of the original baseline density and abundance estimates (see 1.1.1). Larger confidence intervals reflect lower levels of precision in these original estimates. The 95% confidence interval shows the range within which we can be 95% confident the true value falls. Natural England advise that compensation measures are scaled using the upper 95% confidence limit

[11] Flamborough Bird Observatory. 2020. Annual Report 2020. Flamborough Bird Observatory Trust
[12] O'Hara D. 2025. Winter 2024/25 Guillemot attendance at RSPB Bempton Cliffs, Flamborough & Filey Coast SPA. Summary report to Natural England as part of the mNCEA Project.
[13] Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for biologically defined minimum population scales (BDMPS). Natural England Commissioned Reports, Number 164.
[14] Butcher J., Aitken D. and O'Hara D. 2024. Flamborough and Filey Coast SPA Seabird Monitoring Programme. 2024 Report.

to ensure that, given the uncertainties regarding the predicted impacts, decision-makers can still have confidence that the compensatory measures can provide sufficient benefit, should the impacts exceed those of the central prediction.

We recognise that using the 95% UCL impact value can, in combination with use of greater ratios, result in large compensation quanta for some species, and that therefore a pragmatic interpretation of these calculations may be needed. For example, where a compensation case for a project with a substantial quantum is well detailed and has good prospects of success, a case could be made that where the Hornsea 3 part 2 approach is adopted, it is unnecessary to then adopt both the 95% UCL impact value and a ratio higher than 2:1 to adequately account for uncertainty.

It is also important to distinguish between the compensation quantum, which informs the scaling and design of the measure to be implemented, and the target or objective for the compensation to achieve, which Habitats Regulations Assessments have generally (though not always) set with respect to the central impact value. Setting the compensation quantum with respect to UCL values reflects the need to provide the Secretary of State (SoS) with sufficient confidence that the measure can offset a greater level of impact from the development than the central impact value, should that arise, with ratios used to take into account the level of uncertainty associated with the effectiveness of a given measure. However, using these calculations as the basis for targets to assess the success of the measures risks only judging that success against the worst-case scenario requirements, which we do not consider to be proportionate, given that under-performance of the compensation measures against the target will require adaptive management to be put in place. We consider this pragmatic approach is likely to be reflected in the frequent use of the central impact value for target-setting by SoS.

1.2.2 Method for calculating compensation quantum.

The Applicant currently disagrees with the use of the Hornsea 3 part 2 method to calculating compensation quantum. We acknowledge that identifying a robust and proportionate approach to quantifying the compensation requirements for offshore windfarms impacting seabird SPAs has proved challenging. Multiple methods have been used but there is no clear consensus on the most appropriate method to use. On behalf of Collaboration on Offshore Wind Strategic Compensation (COWSC), Natural England commissioned the British Trust for Ornithology (BTO) to conduct a review of existing approaches to compensation calculations, and, if possible, to make recommendations to COWSC regarding the most appropriate method to use. Natural England is currently considering the recommendations made in the BTO report

and will update our advice, if necessary, in due course. We have provided the Applicant with an 'in press' copy of the BTO report to inform their approach, noting that the formal research report is not scheduled to be published until sometime in May. In the meantime, our advice remains that given in recent Examination submissions, that the Hornsea 3 part 2 method should be used to calculate the number of breeding pairs required to compensate for impacts on Kittiwake, but we will accept the use of the Hornsea 4 method for other species provided that this is based on the 95% upper confidence limit and noting that additional calculations to factor in philopatry may be required.

We note the Applicant's concerns regarding the lack of information in the public domain on the details of the Hornsea 3 part 2 method and the consequent difficulty of replicating it. We have therefore provided the Applicant with a spreadsheet containing the details of what Natural England considers to be the calculations involved in this method, noting that this has been created for Natural England's own internal use and is not an official version of the method.

1.3 Step 3 - Application of compensation ratio

See also Natural England responses to ExQ1[REP3-057] OR.1.12 and OR.1.15.

Natural England note that the application of a compensation ratio is used to address the uncertainty that a proposed compensation measure will be able to deliver the required benefits, and that our position on the application of compensation ratios is in agreement with that proposed by the Applicant in paragraphs 47 and 69. However, the distinction between the uncertainties inherent within the impact assessment (see Step 1) and those associated with the delivery of the compensation measure is an important one, which the Applicant has not made consistently. For auks they state that the application of any ratio when calculating compensation requirements is arbitrary and unnecessary, whilst for kittiwake they acknowledge that a 2:1 ratio is appropriate given the uncertainties surrounding Artificial Nest Structures (ANS). We highlight that greater uncertainty exists regarding the likely success of auk compensation measures than do for kittiwake. We therefore consider that the Applicant's suggestion of a 1:1 ratio for auks fails to take into consideration the uncertainties associated with the potential success of the proposed measures.

The application of a compensation ratio should be set on a case-by-case basis. Given that specific details of the location, numbers of nesting spaces, and design for kittiwake ANS and specific details of proposed auk compensation measures have not, as yet, been provided by

the Applicant, we are currently unable to advise on appropriate compensation ratios at this time. However, we note that we are unlikely to advise that a ratio of 1:1 is appropriate for auks.

2. The Applicants' Responses to ExQ1 [REP3-027]

ExQ1 - OR.1.2, OR.1.9

Natural England acknowledge our error in failing to notice the PVA outputs that were provided in Annex A of RIAA HRA Part 4 of 4 – Marine Ornithological Features (Revision 3) [AS-085]. We note that further updates to the PVAs will be provided at Deadline 4, and we will therefore review both sets of PVA outputs for comment at Deadline 5. The Applicant has stated that the complete outputs from the PVAs would not be helpful as they are too long and detailed. Natural England advise that, in terms of PVA outputs, the *'Tables of main PVA metrics'* would be sufficient for the purposes of revision.

The Applicant has also stated that Sheringham Shoal and Dudgeon Extension Projects Offshore Wind Farm (SEP & DEP OWF) did not provide PVA input parameters in their public submissions. We would like to signpost the Applicant to input parameters for the PVAs undertaken by SEP & DEP, which were provided in their RIAA (e.g. Table 9-122) [APP-059] and Appendix 11.1 Offshore Ornithology Technical Report (Tables 11.11 – 11.17) [APP-195].