



THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES
2010

Outer Dowsing Offshore Wind Farm

Appendix F6 to the Natural England's Deadline 6 Submission
Natural England's advice and end of Examination position on Offshore Ornithology

For:

The construction and operation of Outer Dowsing Offshore Wind Farm located approximately 54 km from the Lincolnshire Coast in the Southern North Sea.

Planning Inspectorate Reference EN010130

4th April 2025

Appendix F6 – Natural England’s Advice and end of Examination position on Offshore Ornithology for Outer Dowsing Offshore Windfarm

In formulating these comments, the following documents have been considered:

- [REP4a-012] Environmental Statement (ES) Chapter 12 – Offshore Ornithology
- [REP4a-030] ES Appendix 1 – Intertidal & Offshore Ornithology Technical Baseline
- [REP4a-147] ES Appendix 2 Collision Risk Modelling V2
- [REP4a-148] ES Appendix 3 Displacement Assessment V2
- [REP4a-149] ES Appendix 4 Population Viability Analysis V2
- [REP5-101] Report to Inform Appropriate Assessment (RIAA)
- [REP4-034] RIAA Offshore and Intertidal Ornithology Apportioning V3
- [REP4-036] RIAA Ornithology Population Viability Analysis (Habitats Regulations Assessment) V3

1. Introduction

This document provides an overview of Natural England's final positions on the potential for significant adverse impacts (Environmental Impact Assessment (EIA)) and the potential for Adverse Effects on Integrity (AEoI) (Habitats Regulations Assessments (HRA)) on key seabird species at Deadline 6. When compiling this document, we have primarily used the submissions from the Applicant listed above.

2. Methods

Displacement

Natural England’s approach to displacement is that we provide values as a range of displacement and mortality rates bounded by the upper and lower ranges for each species; the rates are defined in the species sections below.

Collision

For collision risk modelling impacts, we consider the range presented by the Applicant for the project alone based on the Natural England approach, as set out in the SNCB guidance note (JNCC et al. 2024), and use the central value from that range for the in-combination assessments.

Where the Applicant has presented an assessment based on the ‘high’ and ‘low’ scenarios, we have based our conclusions on the ‘high’ scenario as the worst-case scenario.

Apportioning to Special Protection Areas (SPAs)

Natural England's approach to apportioning impacts from the Project to Special Protection Areas (SPAs) is as follows:

- Not applying sabbatical rates to exclude those individuals from SPAs
- Calculating adult proportions from baseline surveys for species where it is possible to reliably distinguish adults from immatures (i.e. kittiwake, gannet and lesser black-backed gull), acknowledging that it may be necessary to assume all 'adult-type' birds are adults, or assuming 100% adults where it is not possible to reliably identify adults.
- For breeding season apportioning, using the NatureScot apportioning tool (NatureScot, 2018) with adjustments for the following species:
 - Gannet: apportioning 100% to Flamborough & Filey Coast (FFC) SPA due to the proximity of the array area to the SPA and the fact that best available evidence shows high segregation in foraging areas from UK gannet colonies.
 - Kittiwake: the consideration of kittiwake breeding on offshore oil and gas platforms in the apportioning resulting in an apportioning rate to Flamborough & Filey Coast SPA of 61.3%.
- For non-breeding season apportioning, using the Tables presented within Appendix A of Furness (2015) to determine the proportion of birds from each colony against the total relevant biologically defined minimum population scale (BDMPS) population during the relevant non-breeding season.

Bespoke approach to apportioning guillemot and razorbill to Flamborough & Filey Coast SPA in the post-breeding season

At Relevant Representations (RR) [RR-045], Natural England set out our guidance on the assessment and apportioning of guillemot and razorbill displacement impacts for Outer Dowsing Offshore Windfarm (ODOW) (Appendix 2 of Appendix F to RR-045). The need for a bespoke approach was identified due to high abundance and density figures for both species within the array area in August and September, indicating a high degree of importance of the array area for these species in this post-breeding period, and the risk that applying the standard BDMPS apportioning approach for these two species in August and September is likely to underestimate the impacts on guillemot and razorbill at Flamborough and Filey Coast SPA. We note that this is similar to the approach advised by Natural England for Hornsea Project 4 Offshore Wind Farm (OWF).

For guillemot, where the 'standard' approach is to consider two seasons – breeding and non-breeding - the advised 'bespoke' approach consisted of an additional post-breeding 'moult and chick-rearing' period (August and September), for which an apportioning rate of 68.5% is applied. For razorbill, where the standard approach is to apply four seasons – breeding, post-breeding migration, winter and pre-breeding migration – the 'bespoke' approach advised by Natural England is to apply an apportioning rate of 70.6% during the post-breeding migration (August to October).

Please refer to Appendix 2 of Appendix F of our Relevant Representations [REP-045] for the supporting evidence behind the advised approach, and the explanation of how the advised apportioning rates were calculated.

Approach to Interpretation of Predicted Impacts and Application of Population Viability Analysis (PVA)

Natural England advise that where there is a change of greater than 1% in the baseline mortality threshold of a relevant reference population, further investigation of the potential impacts should be carried out. This generally requires the use of Population Viability Analysis (PVA) to assess how the predicted impacts of the development may influence the population relative to an unimpacted scenario. Cook & Robinson (2016) recommend using both the counterfactual of population growth rate (CGR) and the counterfactual of population size (CPS) metrics. Similarly, a further review by Jital et al. (2017), commissioned by Marine Scotland Science, also reinforce the utility of both metrics. Natural England therefore recommends that assessments should focus on the CGR and CPS metrics to quantify the relative changes in a population in response to anthropogenic impacts, as these are the two metrics that have been shown to be the least sensitive metrics to mis-specification of the population trend and demographic rates used in the PVA model.

Natural England advises that a range of site and project specific factors need to be considered when making integrity judgements. Population metrics need to be considered with reference to the site trend, population status and SPA conservation objectives for HRA (including attribute targets in the Supplementary Advice on Conservation Objectives). As it is not known what the growth rate of a specific feature of a colony will be over the next 35 years (lifespan of the project), this uncertainty should be considered when judging the significance of predicted impacts against the conservation objectives for the feature.

In interpreting the metrics from a PVA, the CPG and CPS metrics at the end of the impact (e.g. after 35 years) should be considered against a realistic assessment of the current and

potential future population trend. Where a specific feature of a designated site has a conservation objective to restore the population size to a given level, as is the case for kittiwakes at FFC SPA, reductions in population growth rates and population size because of additional anthropogenic impacts are likely to be counter to such conservation objectives. Whereas, if a specific feature has a conservation objective to maintain the population size at or above a given level, as is the case for gannet, guillemot and razorbill at the FFC SPA, then consideration will need to be given to a range of plausible growth rates for the colony and whether the PVA metrics suggest that the population will be maintained at or be able to grow above the current population size over the lifetime of the predicted additional impact.

Approach to Cumulative and In-combination Assessments

In some cases, the Applicant has presented a number of different in-combination totals based on the inclusion of different values for consented or Tier 1d (application submitted but not yet determined) projects.

Where the Applicant has presented the impact for 'total consented projects' for both the 'standard apportioning' and 'bespoke apportioning' for guillemot and razorbill, this is due to differences in the apportioning approach for Hornsea 4 (see species accounts below). Given Natural England have advised the bespoke approach is the most appropriate treatment of data for the Hornsea 4 project, Natural England has used the in-combination figures calculated using the 'bespoke apportioning' total for consented projects to inform our in-combination position.

For the consideration of impacts in-combination with other plans and projects, where the Applicant has presented a 'best-case' and 'worse-case' scenario for the predicted impacts from Dogger Bank South projects, which as explained by the Applicant in the updated Report to Inform Appropriate Assessment (RIAA) [REP5-101] is due to differences in apportioning approaches, Natural England has selected the impact that reflects our approach, and this is explained in the individual species accounts.

Lastly, the Applicant's approach to calculating in-combination displacement impacts is to sum the apportioned abundances for all projects and apply a range of displacement and mortality rates to this total. However, this does not allow for the consideration of previous advice Natural England has provided on the appropriate displacement and mortality rates for guillemot, razorbill and gannet for Hornsea 4 specifically (see Sheringham Shoal Extension and Dudgeon Extension Project (SEP&DEP) End of Examination Position on Offshore Ornithology [REP8-102] and the species accounts below). Therefore, Natural England has

recalculated the total impact applying the bespoke mortality rates for Hornsea 4 and presented this alongside the total based on applying the same displacement and mortality rates to all projects.

3. Highly Pathogenic Avian Influenza (HPAI) Epidemic

We must highlight that the long-term impacts of the recent and ongoing outbreaks of avian influenza on the seabird SPA populations are presently not fully understood. We note that the most severe outbreak of Highly Pathogenic Avian Influenza (HPAI) in wild birds ever recorded began in 2021, with severe impacts on seabird populations in 2021, 2022 and 2023, and that there has therefore not been time to fully assess the long-term impacts of this outbreak on seabird populations, as has been made clear in assessments such as that by Tremlett et al (2024). We also note that, at the time of writing, this outbreak continues globally and, in the UK, and future impacts on UK seabird populations cannot be ruled out. This means there is considerable uncertainty regarding the likely population sizes and growth rates in the future. The future population size will have implications for the numbers of birds present in the ODOW project area and the likely levels of impact arising from ODOW, and also the robustness of the population and therefore its resilience to impacts.

Natural England provided advice on our approach to HPAI to the Applicant in the pre-application stage¹ which included consideration of whether survey data collected after June 2022 (as applies to half of the Applicant's data) may have been affected by HPAI. In addition, the Applicant undertook an assessment considering whether their baseline characterisation data requires any adjustment in light of HPAI, including a comparative assessment using data from nearby projects, as presented in REP4a-043; Natural England agreed with the Applicant's conclusion that no adjustment to the treatment of the baseline characterisation data was required.

Nonetheless, Natural England considers there is a need to have regard for the potential long-term impacts of HPAI on seabird populations when drawing conclusions and undertaking integrity judgements for the reasons outlined above. As outlined in Natural England's Best Practice Advice (Parker et al. 2022), when interpreting the outputs of PVAs in order to make integrity judgements, *"population metrics need to be considered with reference to the site trend, population status and SPA conservation objective for HRA, or to the relevant reference population trend and conservation status of the species for EIA. As it*

¹ Natural England. 2022. Highly Pathogenic Avian Influenza (HPAI) outbreak in seabirds and Natural England advice on impact assessment (specifically relating to offshore wind). September 2022.

is not known what the growth rate of a specific feature of a colony will be over the next 30 years, this uncertainty should be considered when judging the significance of predicted impacts against the conservation objectives for the features.” This includes consideration of the PVA metrics against a realistic assessment of the current and potential future population trends (growth rates and population sizes), and this in turn should consider, using expert judgement, how stochastic events such as further HPAI outbreaks and climate change may influence these trends.

4. Other Plans and Projects included in the Cumulative and In-combination Assessments

Natural England notes that a number of North Sea OWF projects are currently going through or have recently completed Examination with similar timeframes to ODOW; these are Rampion 2, Five Estuaries, North Falls and Dogger Bank South (East and West) projects. Additionally, Dogger Bank D are due to consult with Natural England and other stakeholders regarding their Preliminary Environmental Information Report (PEIR) in June 2025. There are also a number of projects in Scottish waters with predicted impacts to English SPAs which are currently awaiting determination. including Berwick Bank and Ossian, where Natural England has advised Adverse Effect on Integrity (AEoI) cannot be ruled out on English SPAs.

Natural England advised the Applicant at Relevant Representations [REP-045] that the cumulative and in-combination assessments should be updated as required throughout examination to include the most up to date estimated impacts from these projects; the updated RIAA [REP5-101] includes a revised in-combination assessment to reflect changes to project status and predicted impacts from these projects. Notwithstanding, Natural England has highlighted some discrepancies with the values presented by the Applicant within the in-combination assessment and those presented within the relevant documents for Dogger Bank South within our Deadline 5 response [REP5-166] and advised that the Applicant reviews these documents and updates the in-combination totals accordingly. We have also identified some discrepancies between the impact values presented by the Applicant for Berwick Bank Offshore Wind Farm and those presented within those project's assessment documents. However, Natural England do not consider this to prevent us from making our integrity judgements.

5. Summary of Natural England's Position Based on our Advised Approach to the Assessments

The following table represents Natural England's current position on the potential for AEol (Table 2) for ODOW alone and in-combination with other plans and projects at Deadline 6. These tables should be considered in relation to the information provided above and in the detailed comments and conclusions on project alone and in-combination impacts for HRA below.

Table 1: Summary of HRA conclusions for assessments of ODOW alone and in-combination with other plans and projects.

HRA Species and Site	Outer Dowsing alone	Outer Dowsing in-combination with other OWF projects
Gannet, Flamborough & Filey Coast SPA: collision + displacement	No AEol	No AEol
Kittiwake, Flamborough & Filey Coast SPA: collision	No AEol	Unable to rule out AEol
Guillemot, Flamborough & Filey Coast SPA: displacement	No AEol	Unable to rule out AEol
Razorbill, Flamborough & Filey Coast SPA: displacement	No AEol	Unable to rule out AEol
Breeding seabird assemblage, Flamborough & Filey Coast SPA: collision and/or displacement	No AEol	Unable to rule out AEol
Guillemot, Farne Islands SPA: displacement	No AEol	Unable to rule out AEol
Lesser black-backed gull, Alde-Ore SPA: collision	No AEol	No AEol
Sandwich tern, North Norfolk Coast SPA: collision	No AEol	No AEol
Red-throated diver, Greater Wash SPA: displacement	No AEol	No AEol

6. Detailed Comments and Conclusions on Outer Dowsing OWF Alone and In-combination Impacts for HRA

This paper is a technical document submitted into the Outer Dowsing OWF Examination to provide scientific justification for Natural England's advice provided on the significance of the potential for project alone and in-combination impacts in relation to Habitats Regulation Assessment (HRA). Our advice is based on best available evidence at the time of writing and is subject to change in the future should further evidence be presented.

Potential for Adverse Effects on Integrity of Designated Seabird Features of Flamborough and Filey Coast Special Protection Area (FFC SPA)

Gannet – alone and in-combination with other plans and projects

Displacement

For Natural England's approach to displacement, we provide values as a range of displacement and mortality rates bounded by the upper and lower ranges for each species.

For gannet, in this instance it is agreed that this range is defined as 60 - 80% displacement and 1% mortality, as presented by the Applicant, noting that in the case of Hornsea 4 it was considered appropriate to employ a larger range of mortality from 1-10% as Hornsea 4 is situated at close proximity to FFC SPA, while in other recent cases (Boreas, Vanguard, East Anglia 1 North (EA1N) and East Anglia 2 (EA2), SEP and DEP) Natural England have accepted a mortality rate of 1% as these projects, while still in foraging range, are at some distance from the colony.

Natural England considers that Hornsea 4 should be assessed for a range of mortality from 1-10%, which means that a correction needs to be applied to the figures presented by the Applicant in the updated RIAA. Natural England has presented this in Table 3 below.

Collision

The Applicant has presented an updated assessment of collision risk in accordance with our advised methods and modelling parameters in REP4a-147.

Natural England provided advice to Outer Dowsing during the pre-application stage regarding the application of a macro-avoidance (MA) rate for gannet, specifically that this should be applied using a range of 65-85% or a single rate of 70%, in line with our draft Collision Risk Modelling Parameters guidance note (July 2022). The Applicant has subsequently presented collision impacts for gannet for the Project alone based on the single rate of 70%.

Predicted Impacts and Integrity Judgement

ODOW alone

The combined displacement and collision impacts result in increases to baseline mortality of substantially less than 1% and no further assessment is required.

Natural England can advise that there is no adverse effect on integrity (AEol) of the gannet feature of the FFC SPA for Outer Dowsing alone.

ODOW in-combination with other plans and projects

For Dogger Bank South, Natural England has used the predicted impact based on 100% apportioning to FFC SPA in line with our approach to apportioning for gannet. Note that this is the approach the Applicant has used for their own assessment of impacts to the gannet feature of FFC SPA.

In combination, the predicted combined displacement and collision impacts based on Natural England advice vary due to the range in displacement and mortality rates assessed. All scenarios result in the range of predicted impacts for FFC SPA gannet exceeding a 1% increase in the baseline mortality (based on the latest SPA count). Thus, further consideration of the potential population level impacts for FFC SPA is required.

FFC SPA has a conservation objective for gannet to maintain the size of the breeding population at a level which is above 8,469 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.

Natural England's in-combination conclusions are based on a predicted total impact mortality from collision and displacement combined of 151 - 242, with this range based on 60 – 80% displacement and 1% mortality rate for all projects apart from Hornsea 4 for which a mortality range of 1-10% is applied (see Table 3). This aligns with the advice provided to Hornsea 4 [RR-029] to account for the proximity of the Hornsea 4 array area to FFC SPA. This range of impacts produces Counterfactuals of Growth Rate of 0.994 - 0.991 representing a reduction in growth rate of 0.6-0.9%. At this impact, the colony would be predicted to maintain its current size or increase for a growth rate scenario of $\geq 1\%$.

As highlighted by the Applicant in the RIAA [REP5-101], the average growth rate at FFC SPA between 2000 and 2023 was 9.5%. Nonetheless, it is not known what the growth rate of the

colony will be over the next 35 years, and FFC SPA is a relatively 'young' colony. Natural England carried out a review of population growth trends at a suite of long-established gannet colonies for the Hornsea 4 examination, which was presented in our Hornsea 4 closing statement [REP7-104] and also referenced in our closing statement for Sheringham and Dudgeon Extension Projects [REP8-102]. This stated:

"We note that the gannet population of FFC SPA increased (compound growth rate) at 9.9% per annum (between 2003/4 and 2015, JNCC Seabird Monitoring Programme 'SMP' data). Using FFC SPA data for 2000-2017 the growth rate was 10.2% per annum.

However, it is not known what the growth rate of the colony will be over the next 35 years and the FFC SPA colony is a relatively 'young' colony (90 years or so). To define possible population trajectories, Natural England reviewed growth rates for the 22 gannet colonies across Britain, Channel Islands and Ireland with repeated census data (see H4 for full review), and found that the average annual growth rate calculated over a period of >90 years across the 8 gannet colonies with records exceeding 90 years is 1.8%.

Given the analysis of trends in gannet colony growth rates amongst a suite of long-established colonies, it is highly likely that its annual growth rate averaged over the whole period since founding will drop from its current average of approximately 11% over the first 80 years. The highest annual colony growth rate calculated over a period of >100 years is 4.5% at Grassholm. The Flamborough colony is unlikely to achieve a higher annual growth rate than this.

The analysis suggests that in the long term it is likely the growth rate at FFC SPA will decrease from approx. 10%, potentially to something in the order of 1.8-4.5%. However, even when taking into account the uncertain population implications of HPAI, it seems unlikely that the population growth rate for gannets at FFC SPA would decrease from approx. 10% per annum to under 1% in the next 35 years. This conclusion can only be drawn with reduced confidence until there is a greater understanding of HPAI impacts."

Even when taking into account the uncertain long-term population implications of HPAI, it would seem unlikely that the population growth rate for gannets at FFC SPA would decrease from approx. 10% per annum to under 1% in the next 35 years. However, this conclusion can only be drawn with reduced confidence until there is a greater understanding of the long-term impacts of HPAI.

Table 2: Predicted combined collision and displacement impacts on the gannet FFC SPA population for the range of revised mortality impacts as presented in the updated RIAA [REP5-101]) for Outer Dowsing alone and in-combination for combined collision and displacement impacts. Counterfactuals of growth rate and counterfactuals of final population size have been presented as by the Applicant within the updated RIAA

Gannet: Flamborough and Filey Coast SPA						
Assessment description	Displacement	Collision mortality 99.2% AR and MA of 70%*	Combined collision and displacement	% Baseline mortality using 2023 census data**	Counterfactual of Growth Rate (CGR) after 35 years	Counterfactual of Final Population Size (CPS) after 35 years
Outer Dowsing alone***	3.16 – 4.22 (3.69)	1.1	4.26 – 5.32 (4.79)	0.17 – 0.22 (0.19)	(1.000)	(0.993)
Consented projects, plus Tier 1d with all projects at 60-80% (70%) and 1%***	70.62 – 94.16 (82.40)	79.7	150.32 – 173.86 (162.09)	6.09 – 7.04 (6.56)	(0.994)	(0.806)
Consented projects, plus Tier 1d at 60-80% and 1%, except H4 at 60-80% displacement and 1-10% mortality	70.62 – 162.28	79.7	150.32 – 241.98	6.56 – 9.80	0.994 – 0.991****	0.806 - 0.712****

* the majority of collision numbers were updated at SEP&DEP to reflect the updated avoidance rate of 99.2% and a MA of 70%, which the exception of Kentish Flats Extension and Methil where the avoidance rate used was not known, and therefore no adjustment was made

** 30,466 breeding adults, baseline mortality of 2,468

*** at 60-80% displacement and mortality 1% (70% and 1%)

**** PVA was not run by the Applicant for these impact values but run by Natural England

On this basis Natural England can advise that there is no adverse effect on integrity (AEol) of the gannet feature of the FFC SPA for Outer Dowsing in-combination with currently consented projects.

Kittiwake – Alone and In-combination with Other Plans and Projects

Background

The Applicant conducted a survey of breeding seabirds on offshore oil and gas installations within a 20km radius from the Project array area in 2022 and 2023 and used the census data from the 2023 surveys to estimate the number of kittiwake breeding on offshore platforms (hereafter referred to as 'offshore breeders'); they then presented two assessments for kittiwake at FFC SPA based on the inclusion and exclusion of these offshore breeders within the apportioning. The inclusion of offshore breeders results in an apportioning rate of 61.3% breeding adults to FFC SPA. Natural England have based our conclusions on the assessment that includes offshore breeders, with the view that the methodology employed by the Applicant (where only confirmed Apparently Occupied Nests (AONs) are used to estimate the population) provides a reasonable estimate of the minimum number of kittiwake breeding on offshore platforms.

Approach to in-combination assessment

The Applicant has provided in-combination totals based on both the inclusion and exclusion of projects for which compensation has been proposed. This is in line with Natural England advice and takes account of the current uncertainty regarding the effectiveness of compensatory measures for seabirds. Natural England have based our final conclusions on the in-combination total that includes 'compensated for' projects, though we note that excluding projects with compensatory measures would not alter this conclusion.

For impacts from Dogger Bank South, where the Applicant has presented a 'best-case' and 'worst-case' figure, based on adult proportions of 53% and 100% respectively, Natural England has used the predicted impact based on 100% adults due to a disagreement over the way in which the 53% adult proportion has been derived (theoretical stable age structure), as per our advice to Dogger Bank South in our Relevant Representations [RR-039].

Predicted Impacts and Integrity Judgement

ODOW alone

In all cases the collision impacts result in increases to baseline mortality of substantially less than 1% and no further assessment is required.

Natural England can advise that there is no adverse effect on integrity (AEol) of the kittiwake feature of the FFC SPA for Outer Dowsing alone.

ODOW in-combination with other plans and projects

The predicted collision impact arising from ODOW in-combination with other consented and Tier 1d projects has been presented by the Applicant for two scenarios: including and excluding projects that have been 'compensated for' (see note on Table 4), resulting in 517 birds (causing an increase to baseline mortality of 3.97%) or 619 (causing an increase to baseline mortality of 4.76%) – see Table 4. Both the CGR and CPS indicate that the population could decline from current levels.

While the current HPAI outbreak adds further uncertainty to the long-term population status for kittiwakes at FFC SPA, Natural England's advice regarding in-combination collision impacts to FFC SPA kittiwakes remains the same as that set out in our end of examination response during the Hornsea 4 Examination (REP7-104). Namely that, as this feature has a restore conservation objective requiring the population to be returned to previous levels, and because there are indications that the predicted level of mortality would mean the population could decline from current levels should it currently be stable, **it is not possible to rule out AEol of the kittiwake feature of the FFC SPA for collision impacts from Outer Dowsing in-combination with other plans and projects.**

We note that the Secretary of State (SoS) has drawn similar conclusions for all OWF projects from Hornsea 3 onwards and that the Applicant has also concluded AEol cannot be ruled out in-combination with other plans and projects, and has proposed compensatory measures for kittiwake.

Table 3: Predicted impacts on the kittiwake FFC SPA population for the range of revised mortality impacts presented in the Applicant's updated RIAA [REP5-101] for ODOW alone and in-combination collision impacts. Counterfactuals of growth rate and counterfactuals for final population size have been presented as by the Applicant within the updated RIAA

Kittiwake: Flamborough and Filey Coast SPA				
Assessment description	Collision mortality 99.2% AR*	% Baseline Mortality using the 2022 census data**	Counterfactual of Growth Rate (CGR) after 35 years	Counterfactual of Final Population Size (CPS) after 35 years
Outer Dowsing alone	15.5	0.119%	1.00	0.993
Consented projects, plus Tier 1d minus 'compensated projects'***	517	3.97%	n/a	n/a
Consented projects, plus Tier 1d incl. 'compensated projects'***	618.9	4.76%	0.992	0.743

*the majority of collision numbers were updated at SEP&DEP to reflect the updated avoidance rate of 99.2%, which the exception of Kentish Flats Extension and Methil where the avoidance rate used was not known, and therefore no adjustment was made

**89,148 breeding adults, baseline mortality of 13,015

***'compensated projects' are Hornsea Three, Norfolk Boreas, Norfolk Vanguard, East Anglia One North, East Anglia Two, Hornsea Four and Sheringham Shoal and Dudgeon Extension Projects

Guillemot – Alone and In-combination with Other Plans and Projects

Background

For Natural England's approach to displacement, we provide values as a range of displacement and mortality rates bounded by the upper and lower ranges for each species. For guillemot, in this instance it is agreed that this range is defined as 30 - 70% displacement and 1 - 10% mortality (as presented by the Applicant in the updated RIAA [REP5-101]).

In the case of both the Hornsea 4 and ODOW, there are a range of estimates presented, which differ in the approach to apportioning and seasonal definitions (please refer to Natural England's advice to Hornsea 4 submitted during the Hornsea 4 examination [REP5-115 and REP6-056], and Appendix 2 of RR-045 for our guidance to ODOW on the assessment of displacement impacts for guillemot at FFC SPA). The Applicant has presented both the Natural England 'standard approach' and Natural England 'bespoke approach' for the project alone assessment, which takes into account the bespoke approach to apportioning advised

for Hornsea 4; they have used the Natural England 'bespoke approach' when presenting the in-combination totals based on Natural England's approach in the updated RIAA [REP5-101] (labelled therein as the "high" scenario). It should be noted that given Natural England have advised the bespoke approach is the most appropriate treatment of data for both the Hornsea 4 project and ODOW, in-combination figures calculated using the 'bespoke' figures for Hornsea 4 and ODOW will inform our in-combination position.

Abundance estimates

In the case of guillemot both model-based and design-based analysis were used to produce abundance estimates. Natural England accept that both approaches can be valid as regards the calculation of abundance, and again will consider a range of values, however, in this instance we have placed more confidence in the outputs using model-based estimates, and the values presented below are using model-based estimates.

Predicted Impacts and Integrity Judgement

Outer Dowsing alone

Whilst the predicted displacement impacts vary due to the range in displacement and mortality rates assessed, the range of predicted impacts at the higher end of the scale, and the predicted mortality at 70% displacement and 2% mortality, exceed an increase in baseline mortality of 1%. Thus, further consideration of the potential population level impacts for FFC SPA is required. Table 5 shows the outputs of the PVA as presented by the Applicant within the RIAA PVA Appendix [REP4-036].

Table 4: Predicted impacts on the guillemot FFC SPA population for the range of revised mortality impacts presented in the Applicant’ s updated RIAA [REP5-101] for ODOW alone based on Natural Englands standard and bespoke approach to apportioning. Counterfactuals of growth rate and counterfactuals for final population size have been presented as by the Applicant within the updated RIAA.

Guillemot: Flamborough & Filey Coast SPA				
Assessment description (alone)	Impact	% Baseline mortality using 2022 census data*	Counterfactual of Grow Rate (CGR) after 35 years	Counterfactual of Final Population Size (CPS) after 35 years
30-70% displacement, 1-10% mortality, NE standard	58.8 – 823.5	0.64 – 9.00	n/a	n/a
70% displacement, 2% mortality, NE standard	164.7	1.8	n/a	n/a
30-70% displacement, 1-10% mortality, NE bespoke	53.29 – 1243.43	0.58 – 13.59	n/a	n/a
70% displacement, 2% mortality, NE bespoke	248.69	2.72	0.998	0.935

* 149,980 breeding adults, baseline mortality of 9148.8

The results of the PVA indicate that a mortality from Outer Dowsing alone of 248.69 would result in a reduction in growth rate of 0.2%.

Natural England advise no AEol on the guillemot feature of the FFC SPA for Outer Dowsing alone.

Projects In-combination with Other Plans and Projects

The full range of displacement impacts are considered; however as a reference point and in line with previous cases, the mortality level arising using 70% displacement for all projects and 2% mortality of all projects has been calculated. We have also calculated the total in-combination impact using 70% displacement and 2% mortality for all projects apart from Hornsea 4, for which 70% displacement and 5% mortality is used; this aligns with the advice provided to Hornsea 4 [REP5-115, REP6-056] and the approach taken for SEP&DEP [REP8-102] to account for the particularly high number of guillemot recorded in the Hornsea 4 array area and the proximity of the Hornsea 4 array area to FFC SPA. Given Natural

England have advised this is the most appropriate treatment of data for the Hornsea 4 project, the latter has informed our in-combination position.

As highlighted in our Deadline 5 submission [REP5-166], the value used for the predicted impact from the Dogger Bank South projects within the in-combination assessment in the updated RIAA [REP5-101] is incorrect, therefore Natural England have recalculated using an annual total (i.e. number of guillemots apportioned to FFC SPA at risk of displacement) of 32,563 (taken from Table 9-28 in the latest version of the Dogger Bank South RIAA Revision 3 published on 26 November 2024 [AS-085]). This increases the number 'at risk' by 16,749 and therefore the predicted impact at 70% displacement and 2% mortality by 234.5 for Dogger Bank South. This in turn results in an increase to the total in-combination impact based on 70% displacement and 2% mortality from 1,347 to 1,581, or an increase from 1,347 to 2,258 when applying a 70% displacement and 5% mortality to Hornsea 4.

Since the PVA run by the Applicant used the incorrect in-combination total of 1,347, Natural England has rerun PVA using the updated total of 1,581, and the counterfactuals presented in Table 6 are because of this PVA. Natural England have advised that the Applicant updates their RIAA at Deadline 6 to present corrected total and PVA outputs for the sake of clarity moving forwards, but our end of Examination conclusions are based on the counterfactuals presented in Table 6.

In the Hornsea 4 and Sheringham and Dudgeon Extensions, Natural England concluded that when considering the colony's current and likely future growth rates, and evidence of declines in productivity, an AEol could not be ruled out for the guillemot feature of the FFC SPA. These considerations remain valid, and the Project will be contributing significant numbers to the in-combination impacts for these species at FFC SPA. An in-combination impact of 1,580 or 2,258 (including a 5% mortality value for Hornsea 4) results in a reduction in growth rate of 1.2% or 1.7% respectively, meaning that the colony would need to maintain a growth rate of 1.2%-1.7% or higher over the next 35 years to avoid the population declining. It is important to note that whilst the current growth rate is approximately 4.5% per annum, the long-term productivity trend continues to be one of steady decline (since 2009).

With the recent HPAI outbreaks adding further uncertainty to the potential long-term population status for guillemot at FFC SPA, Natural England's advice regarding in-combination displacement impacts to FFC SPA guillemot therefore remains unchanged as that set out in our end of examination response during the Hornsea Project 4 Examination [REP7-104] and the Sheringham and Dudgeon Extensions Examination [REP8-102].

Namely that, because there are indications that the predicted level of mortality would mean the population could decline from current levels should the current population growth rate not be sustained, **it is therefore not possible to rule out AEoI of the guillemot feature of the FFC SPA for displacement impacts in-combination with other plans and projects.**

Table 5: Predicted impacts on the guillemot FFC SPA population for the range of revised mortality impacts presented in/estimated from the Applicant's updated RIAA [REP5-101] predicted for project alone and in-combination displacement impacts. Note that counterfactuals of growth rate (CGR) and final population size (CPS) after 35 years have been recalculated by NE due to the errors identified in the Applicant's in-combination total

Guillemot: Flamborough & Filey Coast SPA				
Assessment description	Impact	% Baseline mortality using 2022 census data*	CGR	CPS
Outer Dowsing alone using 'NE standard approach'***	58.8 – 823.5 (164.7)	0.64 – 9.00 (1.8)	n/a	n/a
Outer Dowsing alone using 'NE bespoke approach'***	53.29 – 1243 (248.69)	0.58 – 13.59 (2.72)	(0.998)	(0.935)
Consented projects, plus Tier 1d, using 'NE standard approach' and applying 70% displacement and 2% mortality to all projects	870	9.51	n/a	n/a
Consented projects, plus Tier 1d, using 'NE bespoke approach' for H4, DBS and ODOW and applying 70% displacement and 2% mortality to all projects	1,580	17.27	0.988	0.652
Consented projects, plus Tier 1d, using NE 'bespoke approach' for H4, DBS and ODOW and applying 70% displacement and 5% mortality for H4***	2,258	24.68	0.983	0.542

* 149,980 breeding adults, baseline mortality of 9148.8

** at 30-70% displacement, 1-10% mortality (70% and 2%)

*** Guillemot is assessed in H4 at 70% displacement and 5% mortality. The total number of birds at H4 subject to displacement is 32,309, so applying a 5% mortality rate instead of 2% increases the impact from 452 to 1,131

Razorbill – Alone and In-combination with Other Plans and Projects

Background

For Natural England's approach to displacement, we provide values as a range of displacement and mortality rates bounded by the upper and lower ranges for each species. For razorbill, in this instance it is agreed that this range is defined as 30 - 70% displacement and 1 - 10% mortality (as presented by the Applicant in the updated RIAA [REP5-101]).

In the case of both the Hornsea Project 4 and ODOW, there are a range of estimates presented, which differ in the approach to apportioning in the post-breeding season (please refer to Natural England's advice to Hornsea 4 submitted during the Hornsea 4 examination [REP5-115 and REP6-056], and Appendix 2 of RR-045 for our guidance to Outer Dowsing on the assessment of displacement impacts for razorbill at FFC SPA). The Applicant has presented both the Natural England 'standard approach' and Natural England 'bespoke approach' for the project alone assessment but has used the NE 'bespoke approach' when presenting the in-combination totals based on NE's approach in the updated RIAA [REP5-101] (labelled therein as the "high" scenario). It should be noted that given Natural England have advised the bespoke approach is the most appropriate treatment of data for both the Hornsea 4 project and Outer Dowsing, in-combination figures calculated using the 'bespoke' figures for Hornsea 4 and Outer Dowsing will inform our in-combination position.

Predicted Impacts and Integrity Judgement

Outer Dowsing alone

Whilst the predicted displacement impacts vary due to the range in displacement and mortality rates assessed, the range of predicted impacts at the higher end of the scale, and the predicted mortality at 70% displacement and 2% mortality, exceed an increase in baseline mortality of 1%. Thus, further consideration of the potential population level impacts for FFC SPA is required. Table 5 shows the outputs of the PVA as presented by the Applicant within the RIAA PVA Appendix [REP4-036].

Table 6: Predicted impacts on the razorbill FFC SPA population for the range of revised mortality impacts presented in the Applicant’ s updated RIAA [REP5-101] for ODOW alone based on Natural England’s standard and bespoke approach to apportioning. Counterfactuals of growth rate (CGR) and counterfactuals for final population size (CPS) after 35 years have been presented as by the Applicant within the updated RIAA

Razorbill: Flamborough & Filey Coast SPA				
Assessment description (alone)	Impact	% Baseline mortality using 2022 census data*	CGR	CPS
30-70% displacement, 1-10% mortality, NE standard	10.27 – 239.67	0.16 – 3.72	n/a	n/a
70% displacement, 2% mortality, NE standard	47.93	0.74	n/a	n/a
30-70% displacement, 1-10% mortality, NE bespoke	14.7 – 342.5	0.23 – 5.32	n/a	n/a
70% displacement, 2% mortality, NE bespoke	68.5	1.06	0.999	0.953

* 61,346 breeding adults, baseline mortality of 6,441.3

The results of the PVA indicate that a mortality from Outer Dowsing alone of 68.5 would result in a reduction in growth rate of 0.1%.

Natural England advise no AEol on the razorbill feature of the FFC SPA for ODOW alone.

ODOW In-Combination with Other Plans and Projects

The full range of displacement impacts are considered; however as a reference point and in line with previous cases, the mortality level arising using 70% displacement for all projects and 2% mortality of all projects has been calculated. We have also calculated the total in-combination impact using 70% displacement an 2% mortality for all projects apart from Hornsea 4, for which 70% displacement and 5% mortality is used; this aligns with the advice provided to Hornsea 4 [REP5-115, REP6-056] and the approach taken for SEP&DEP [REP8-102] to account for the particularly high number of guillemot recorded in the Hornsea 4 array area and the proximity of the Hornsea 4 array area to FFC SPA. Given Natural England have advised this is the most appropriate treatment of data for the Hornsea 4 project, the latter has informed our in-combination position.

As highlighted in our Deadline 5 submission [REP5-166], the value used for the predicted impact from the Dogger Bank South projects within the in-combination assessment in the updated RIAA [REP5-101] is incorrect, therefore Natural England have recalculated using an annual total (i.e. number of razorbill apportioned to FFC SPA at risk of displacement) of 10,031 (taken from Table 9-36 in the latest version of the Dogger Bank South RIAA Revision 3 published on 26 November 2024 [AS-085]). This increases the number 'at risk' by 6,716 and therefore the predicted impact at 70% displacement and 2% mortality by 94 for Dogger Bank South. This in turn results in an increase to the total in-combination impact based on 70% displacement and 2% mortality from 266 to 360, or an increase from 332 to 426 when applying a 70% displacement and 5% mortality to Hornsea 4. The values in Table 8 are those that have been recalculated by Natural England.

Since the PVA run by the Applicant used the incorrect in-combination total of 266, Natural England has rerun PVA using the updated total of 360, and the counterfactuals presented in Table 8 are because of this PVA. Natural England have advised that the Applicant updates their RIAA at Deadline 6 to present corrected total and PVA outputs for the sake of clarity moving forwards, but our end of examination conclusions are based on the counterfactuals presented in Table 8.

In the Hornsea 4 and Sheringham and Dudgeon Extensions, Natural England concluded that when considering the colony's current and likely future growth rates an AEol could not be ruled out for the razorbill feature of the FFC SPA. These considerations remain valid, and the Project will be contributing significant numbers to the in-combination impacts for these species at FFC SPA. An in-combination impact of 360 or 426 (including a 5% mortality value for Hornsea 4) results in a reduction in growth rate of 0.7% or 0.8% respectively, meaning that the colony would need to maintain a growth rate of 0.8% or higher over the next 35 years to avoid the population declining. It is important to note that whilst the current growth rate is approximately 6% per annum, it is unclear how this will change in the next 35 years in light of the pressures presented by climate change and HPAI. As part of the Hornsea Four examination, Natural England reviewed population trends at other razorbill colonies in England and Scotland, and considered a range of plausible future growth rate scenarios for FFC of between 1% and 8% per annum. Furthermore, and since then, there have also been indications of declines in productivity, with productivity over the last three years the lowest recorded since monitoring began in 2009.

With the recent HPAI outbreaks adding further uncertainty to the potential long-term population status for razorbill at FFC SPA, Natural England's advice regarding in-

combination displacement impacts to FFC SPA razorbill therefore remains unchanged as that set out in our end of examination response during the Hornsea Project 4 Examination [REP7-104] and the Sheringham and Dudgeon Extensions Examination [REP8-102].

Namely that, because there are indications that the predicted level of mortality would mean the population could decline from current levels should the current population growth rate not be sustained, **it is therefore not possible to rule out AEol of the razorbill feature of the FFC SPA for displacement impacts in-combination with other plans and projects.**

Table 7: Predicted impacts on the razorbill FFC SPA population for the range of revised mortality impacts presented in/estimated from the Applicant's updated RIAA [REP5-101] predicted for project alone and in-combination displacement impacts. Note that counterfactuals of growth rate (CGR) and final population size (CPS) after 35 years have been recalculated by NE due to the errors identified in the Applicant's in-combination total

Razorbill: Flamborough & Filey Coast SPA				
Assessment description	Impact	% Baseline mortality using 2022 census data*	CGR	CPS
Outer Dowsing alone using 'NE standard approach'	10.27 – 239.67 (47.93)	0.16 – 3.72 (0.74)	n/a	n/a
Outer Dowsing alone using 'NE bespoke approach'	14.7 – 342.5 (68.5)	0.23 – 5.32 (1.06)	(0.999)	(0.953)
Consented projects, plus Tier 1d, using 'NE standard approach' and applying 70% displacement and 2% mortality for all projects	299	4.64	n/a	n/a
Consented projects, plus Tier 1d, using 'NE bespoke approach' for H4, DBS and ODOW and applying 70% displacement and 2% mortality to all projects	360	5.59	0.993	0.779
Consented projects, plus Tier 1d, using NE 'bespoke approach' for H4, DBS and ODOW and applying 70% displacement and 5% mortality for H4	426	6.61	0.992	0.744

* 61,346 breeding adults, baseline mortality of 6,441.3

** at 30-70% displacement, 1-10% mortality (70% and 2%)

*** Razorbill is assessed in H4 at 70% displacement and 5% mortality. The total number of birds at H4 subject to displacement is 3259, so applying a 5% mortality rate instead of 2% increases the impact from 46 to 114

Breeding seabird assemblage – Alone and in-combination with other plans and projects

Of the nine species comprising the seabird assemblage, gannet, kittiwake, guillemot and razorbill are qualifying species and therefore are covered above; fulmar, cormorant and shag were screened out of the assessment due to low sensitivity to displacement and collision impacts alongside low numbers recorded within the Project survey area. This leaves puffin and herring gull to be considered separately below.

ODOW alone

Puffin

Whilst the predicted displacement impacts vary due to the range in displacement and mortality rates assessed, the range of predicted impacts at the higher end of the scale exceed an increase in baseline mortality of 1%. Thus, further consideration of the potential population level impacts for FFC SPA is required. Table 9 shows the outputs of the PVA as presented by the Applicant within the RIAA PVA Appendix [REP4-036].

Table 8: Predicted impacts on the puffin FFC SPA population for the range of revised mortality impacts presented in the Applicant' s updated RIAA [REP5-101] for ODOW alone based on Natural England' s approach to apportioning. Counterfactuals of growth rate (CGR) and counterfactuals for final population size (CPS) after 35 years have been presented as by the Applicant within the updated RIAA

Puffin: Flamborough & Filey Coast SPA				
Assessment description (alone)	Impact	% Baseline mortality using 2022 census data*	CGR	CPS
30-70% displacement, 1-10% mortality	0.43 – 10.12	0.15 – 3.496	n/a	n/a
70% displacement, 2% mortality	2.02	0.697	0.999	0.972

* 3,080 breeding adults, baseline mortality of 290

The results of the PVA indicate that a mortality from Outer Dowsing alone of 2.02 would result in a reduction in growth rate of 0.1%.

Natural England advise no AEoI on the puffin component of the breeding seabird assemblage feature of the FFC SPA for ODOW alone.

Herring gull

Impacts to the herring gull feature of the FFC SPA from collision were estimated at 0.2 mortalities per annum. This represents an increase in baseline mortality of substantially less than 1%.

Natural England advise no AEoI on the herring gull component of the breeding seabird assemblage feature of the FFC SPA for ODOW alone.

ODOW in-combination with other plans and projects

Natural England considers mortality impacts to the FFC SPA seabird assemblage in the context of two attributes in the Supplementary Advice on Conservation Objectives:

Assemblage of species: diversity

There are 9 seabird species in the assemblage. It is not expected that the in-combination impacts predicted by the Applicant will result in any one species, including puffin, being lost to the assemblage, nor that the relative proportion of any one species within the assemblage diversity will be diminished, and so the diversity of the seabird assemblage will be maintained.

Assemblage of species: abundance

Whilst in-combination displacement effects from multiple OWF will exert a degree of pressure on the FFC SPA puffin population, at present we do not consider this would be sufficient to trigger an adverse effect on the seabird assemblage abundance attribute due to puffin impacts. This reflects the fairly modest level of the in-combination impact, and recognizes that the species is not a qualifying feature in its own right, or a named component of the assemblage. Nonetheless, due to the predicted impact on the more numerous species comprising the assemblage, particularly guillemot, it cannot be concluded that the overall abundance of the assemblage will be maintained, and AEoI in-combination avoided.

Therefore, Natural England considers that the conclusion reached at Hornsea 4 and Sheringham and Dudgeon Extensions (unable to rule out AEoSI), combined with the above in-combination positions relating to AEoI to kittiwake, guillemot and razorbill as key components of the FFC seabird assemblage mean that Natural England are not able to rule out a conclusion of AEoI for the seabird assemblage at FFC SPA. However, we note that species specific compensation for the above-mentioned species, once fully agreed, will also meet the required compensation for the seabird assemblage as a whole, and no stand-alone compensation proposal is required.

7. Potential for Adverse Effects on Integrity of Designated Seabird Features of Farne Islands SPA Special Protection Area

Guillemot

Background

The guillemot feature of the Farne Islands SPA was assessed for impacts during the non-breeding season only, since the Outer Dowsing array area is well outside the mean maximum foraging range (plus 1 standard deviation); Natural England agree that this is appropriate.

For Natural England's approach to displacement, we provide values as a range of displacement and mortality rates bounded by the upper and lower ranges for each species. For guillemot, in this instance it is agreed that this range is defined as 30 - 70% displacement and 1 - 10% mortality (as presented by the Applicant in the updated RIAA [REP5-101]).

In addition, two approaches to apportioning in the non-breeding season has been presented - one using the standard approach of apportioning 3.7% to Farne Islands SPA (as per the BDMPS approach) during the non-breeding season ('NE standard') and one accounting for the bespoke approach to apportioning guillemot to FFC SPA (see Section 6 Potential for adverse effects on integrity of designated seabird features of Flamborough and Filey Coast SPA – Guillemot), which results in 100% apportioned to FFC SPA in August and September and therefore a lower number being apportioned to Farne Islands in the non-breeding season ('NE bespoke'). The results of both the NE bespoke and NE standard (which is also the 'Applicant approach') are presented in Tables 10 and 11 below. The alone and in-combination conclusions are the same for both approaches.

ODOW alone

Whilst the predicted displacement impacts vary due to the range in displacement and mortality rates assessed, in all cases the range of predicted impacts do not exceed an increase in baseline mortality of 1% and therefore we can conclude that **Natural England advise no AEol on the guillemot feature of the Farne Islands SPA for ODOW alone.**

Table 9: Predicted impacts on the guillemot Farne Islands SPA population for the range of revised mortality impacts presented in the Applicant’ s updated RIAA [REP5-101] for ODOW alone based on Natural England’ s approach to apportioning

Guillemot: Farne Islands SPA		
Assessment description (alone)	Impact	% Baseline mortality using 2019 census data*
NE bespoke		
30-70% displacement, 1-10% mortality	0.50 – 11.2	0.03 – 0.40
70% displacement, 2% mortality	2.23	0.08
NE standard		
30-70% displacement, 1-10% mortality	1.01 - 23.7	0.036 - 0.84
70% displacement, 2% mortality	4.73	0.17

* 46,332 breeding adults, baseline mortality of 2,826

ODOW in-combination with other plans and projects

The full range of displacement impacts are considered, however as a reference point, and in line with previous cases the mortality level arising using 70% displacement and 2% mortality for all projects has been calculated. We refer to the total in-combination value using the bespoke project alone value for ODOW; note that it is slightly higher when using the standard project alone value for ODOW (Table 11).

Natural England have advised regulators that we cannot rule out an in-combination AEol on guillemot at the Farne Islands SPA due to the substantial impacts of the Berwick Bank OWF both alone and in-combination with other plans and projects. Furthermore, Natural England did not agree with the impact assessment carried out for Berwick Bank and considered the estimated mortality from that project likely be an underestimate (meaning that the below in-combination total would also be an underestimate). The ODOW project will be contributing to this impact, albeit their contribution is small. The total predicted in-combination impact including ODOW is 213.4 (at 70% displacement and 2% mortality), representing an increase in baseline mortality of 7.549%. This in turn results in a reduction in growth rate of 0.5%.

Therefore, we are unable to rule of AEol for guillemot at the Farne Islands SPA in-combination with other projects.

The Applicant's mortality impacts on Farne Islands SPA guillemot are less than 1% of those predicted for FFC SPA guillemot. It follows that if the Applicant can deliver the scale of compensation needed for FFC SPA through its package of without-prejudice measures, delivering sufficient compensation for Farne Islands SPA should also be achievable. No 'stand-alone' compensation proposal for the Farne Islands SPA is required.

Table 10: Predicted impacts on the guillemot Farne Islands SPA population for the range of mortality impacts presented in/estimated from the Applicant's updated RIAA [REP5-101] predicted for project alone and in-combination displacement impacts. Note that counterfactuals of growth rate (CGR) and final population size (CPS) after 35 years have been recalculated by NE due to the errors identified in the Applicant's PVA results

Guillemot: Farne Islands SPA				
Assessment description	Impact	% Baseline mortality using 2019 census data*	CGR	CPS
Outer Dowsing alone (NE bespoke)**	0.5 – 11.2 (2.2)	0.017 – 0.395 (0.079)	n/a	n/a
Outer Dowsing alone (NE standard)**	1.01 - 23.7 (4.73)	0.036 - 0.84 (0.17)	n/a	n/a
Consented projects, plus Tier (using 'NE bespoke' for ODOV) 1d**	45.7 – 1,066.8 (213.4)	1.618 – 37.745 (7.549)	(0.995)	(0.830)
Consented projects, plus Tier 1d, using 'NE standard' for all projects	46.3 – 1,079.3 (215.9)	1.637 – 38.188 (7.638)	(0.995)	(0.928)

* 46,332 breeding adults, baseline mortality of 2,826

** at 30-70% displacement, 1-10% mortality (70% and 2%)

8. Potential for Adverse Effects on Integrity of Designated Seabird Features of Alde Ore Estuary Special Protection Area

Lesser black-backed gull - alone and in-combination with other plans and projects

Impacts to the lesser black-backed gull feature of the Alde Ore Estuary SPA from collision were estimated at 0.2 mortalities per annum. This represents an increase in baseline mortality of substantially less than 1%.

Natural England agrees with the conclusion presented by the Applicant in the updated RIAA [REP5-101] that mortality of lesser black-backed gull due to collision at ODOV would not adversely affect the integrity of the Alde-Ore Estuary SPA. Due to the very low project alone impact and limited connectivity between the Project and the colony in question, Natural England agree that there would be no measurable contribution from ODOV to in-combination effects.

9. Potential for Adverse Effects on Integrity of Designated Seabird Features of North Norfolk Coast Special Protection Area

Sandwich tern - alone and in-combination with other plans and projects

Impacts to the Sandwich tern feature of North Norfolk Coast SPA from collision were estimated at 0.4 mortalities per annum. This represents an increase in baseline mortality of substantially less than 1%.

Natural England agrees with the conclusion presented by the Applicant in the updated RIAA [REP5-101] that mortality of Sandwich tern due to collision at ODOW would not adversely affect the integrity of the North Norfolk Coast SPA. Due to the low project alone impact and limited connectivity between the Project and the colony in question, Natural England agree that there would be no measurable contribution from ODOW to in-combination effects.

10. Potential for Adverse Effects on Integrity of Designated Seabird Features of the Greater Wash Special Protection Area

Little gull - alone and in-combination with other plans and projects

The little gull feature of the Greater Wash SPA was assessed for collision risk on migration, with predicted mortality at 0.0 per annum.

Natural England agrees with the conclusions presented by the Applicant in the updated RIAA [REP5-101], that impacts from collision to little gull would not adversely affect the integrity of the Greater Wash SPA. There would be no measurable contribution from Outer Dowsing to in-combination effects.

Red-throated diver - alone and in-combination with other plans and projects

Background

Potential impacts to the red-throated diver feature of the Greater Wash SPA are associated with disturbance and displacement caused by construction of the export cable corridor (ECC), operation and maintenance (O&M) vessels transiting from the port to the windfarm and Offshore Reactive Compensation Platform(s) (ORCP) through the SPA, and displacement from the physical presence of up to two ORCPs, for which the proposed location(s) is/are within the Greater Wash SPA. As the ODOW array is more than 10km from the SPA, no displacement impacts from the array are predicted.

Mortality estimates from all impacts as outlined in Table 12 are small, and additional mitigation measures include the Best Practice Protocol and a seasonal restriction on construction of the ECC (no construction to occur during the sensitive period of November to March inclusive within the Greater Wash SPA and a 2km buffer) committed to by the Applicant following discussions during the examination, and as set out in the updated RIAA [REP5-101] and secured within the Applicant's DCO [REP5-003]. These measures have further reduced the impact from O&M vessel activity and removed impacts from construction of the ECC.

Notwithstanding this, Natural England have advised as per Appendix F1 of our Deadline 1 submission [REP1-061]) and our advice to previous projects including Sheringham and Dudgeon Extension Projects, that impacts to the Greater Wash SPA should principally be considered in terms of the area over which some level of displacement may occur, both in terms of km² and % of the SPA, due to the conservation objectives to “*restore the extent, distribution and availability of suitable habitat*” and to “*reduce the frequency, duration and / or intensity of disturbance*”.

However, the change in design parameters of the ORCP(s), namely a reduction in height from 90m above Lowest Astronomical Tide (LAT) to 59.2m, and the siting of the ORCP(s) within an area that is less than 8km from existing OWFs (Lincs, Lynn and Inner Dowsing) mean that additional displacement effects from the ORCP(s) are likely to be negligible.

Therefore, Natural England agrees with the conclusions presented by the Applicant in the updated RIAA [REP5-101], that with mitigation in place, **impacts from displacement to red-throated diver would not adversely affect the integrity of the Greater Wash SPA. There would be no measurable contribution from Outer Dowsing to in-combination effects.**

Table 11: Predicted impacts on the red-throated diver GW SPA population for the range of mortality impacts and area subjected to displacement as presented the updated RIAA [REP5-101] predicted for project alone displacement impacts

Red-throated diver: Greater Wash SPA				
Impact pathway	Predicted impact prior to mitigation in area (% of SPA) and mortality*	% Baseline mortality based on 2016 count**	Mitigation (embedded or additional)	Predicted impact with mitigation
Array	0	0	Array is >10km from GW SPA	0
Construction of ECC	37.7km ² (1.07%), 0.1 – 0.9	0.02 – 0.21	No construction during sensitive period*** in GW SPA + 2km buffer	0

O&M vessel movements	Not assessed quantitatively	n/a	Best Practice Protocol for vessels****	Negligible
ORCP(s)	30km ² (0.85%), 0.1 – 1.3	0.02 – 0.31	Siting inside 6km buffer zone (and 5km buffer of ORCP within 10km) of existing OWFs and reduction in height	Area of unimpacted SPA is 0. Any increase in displacement effect considered negligible

* Based on a 2km buffer, 90-100% displacement and 1-10% mortality, total area of GW SPA 3,535.78km²

**1,787 individuals, baseline mortality of 419.7

***1st November to 31st March

**** See Table 6-1 in the Applicant's updated RIAA [REP5-101]

11. Environmental Impact Assessment (EIA)

In the case of EIA we have provided two summary tables, indicating our final positions (Table 13) and key data used to reach these positions (Table 14). These positions remain unchanged since Sheringham and Dudgeon Extension Projects (see Appendix B3 to Natural England's Deadline 8 submission [REP8-102]) and hence no further species-specific detail is supplied, with the exception of gannet and kittiwake, for which the total impact has changed due to differences in assessment methodology, and Sandwich tern, where the Applicant has presented assessments based on two different scenarios; these are addressed in species accounts following Table 13.

Summary of Natural England's position based on our advised approach to the assessments

The following tables represent Natural England's position on the potential for significant adverse impacts the projects alone and cumulatively (EIA) other plans and projects at Deadline 6.

Table 12: Summary of EIA conclusions for assessments of Outer Dowsing alone and cumulatively with other plans and projects.

Species & impact pathway	ODOW alone	ODOW cumulatively
Gannet: displacement + collision	No significant adverse impact	Unable to rule out significant adverse impact
Kittiwake: collision	No significant adverse impact	Unable to rule out significant adverse impact
Guillemot: displacement	No significant adverse impact	Unable to rule out significant adverse impact

Razorbill: displacement	No significant adverse impact	Unable to rule out significant adverse impact
Puffin: displacement	No significant adverse impact	No significant adverse impact
Great black-backed gull: collision	No significant adverse impact	Unable to rule out significant adverse impact
Lesser black-backed gull: collision	No significant adverse impact	No significant adverse impact
Herring gull: collision	No significant adverse impact	No significant adverse impact
Sandwich tern: collision	No significant adverse impact	No significant adverse impact
Red-throated diver: displacement	No significant adverse impact	Unable to rule out significant adverse impact

Table 13: Summary of predicted operational impacts: Biologically Defined Minimum Population Scales and percentage of baseline mortality rates. Impacts are provided for the Natural England approach to collision, displacement and combined assessments for relevant species.

Species	Assessment	Predicted Impact		Largest BDMPS	% increase in baseline mortality (BDMPS)	
		ODOW alone	Cumulative		ODOW alone	Cumulative
Gannet	Displacement (60-80% displacement, 1% mortality)	6.7 – 8.9	412.6 – 550.1	n/a		
	Collision	1.7	520.3			
	Combined	8.4 – 10.6	932.9 – 992.8	456,298	0.010 – 0.012	1.10 – 1.17
Gannet (with H4 at 60-80% displacement and 1-10% mortality)	Combined	8.4 – 10.6	932.9 – 1,226.4	456,298	0.010 – 0.012	1.10 - 1.44
Kittiwake	Collision	33.2	3,755	839,456	0.025	2.84
Guillemot (NE standard)	Displacement (30-70% displacement, 1-10% mortality)	61.29 – 1430.1	2,212 – 51,612	2,045,078	0.021 – 0.498	0.770 – 18.0
Guillemot (NE bespoke*)	Displacement (30-70% displacement, 1-10% mortality)	74.1 – 1729.6	2,225 – 51,911	2,045,078	0.026 – 0.602	0.774 – 18.1
Razorbill	Displacement (30-70% displacement,	36.8 – 858.0	651.5 – 15,201	591,874	0.048 – 1.113	0.845 – 19.7

	1-10% mortality)					
Puffin	Displacement (30-70% displacement, 1-10% mortality)	3.2 – 75.6	201.4 – 4,699	868,689	0.003 – 0.073	0.195 – 4.55
Great black-backed gull	Collision	4.0	1420	91,399	0.045	16.0
Lesser black-backed gull	Collision	2.4	689.3	209,007	0.009	2.67
Herring gull	Collision	2.9	1,019	466,510	0.004	1.27
Sandwich tern	Collision	0.4	80.2	38,051	0.004	0.89
Red-throated diver (array)	Displacement (4km buffer, 90-100% displacement, 1-10% mortality)	1.62 – 18.00	42.7 – 459.3	13,277	0.054 – 0.595	1.41 – 15.19
Red-throated diver (ECC incl. ORCP)**	Displacement (2km buffer, 90-100% displacement, 1-10% mortality)	0.1-1.3		13,277	0.004 – 0.042	

* NE bespoke refers to three bioseasons (breeding, post-breeding and non-breeding)

** Impacts from construction of the ECC are expected to be negligible, due to the seasonal restriction on construction within the Greater Wash SPA and a 2km buffer. Though impacts from the ORCP have been assessed at 90-100% displacement and 1-10% mortality for the ORCP + 2km buffer, the displacement effects from existing windfarms are likely to mean that additional displacement impacts from the ORCP(s) is/are even lower than predicted as above.

Gannet

The total cumulative collision mortality presented here of 520 is less than at SEP&DEP (651). This is because the Applicant has recalculated collision mortality for other projects using an updated avoidance rate of 0.993 (as advised by Natural England for the stochastic CRM) whereas SEP&DEP used 0.992 (as advised by Natural England for the Basic Band model), except for projects where the avoidance rate is unknown, in which case existing values were retained. Both totals are inclusive of 70% macro-avoidance (again, except for those projects with unknown avoidance rates, as above).

Gannet is Amber listed under BOCC (Birds of Conservation Concern, Stanbury et al. 2021) and classified as 'Least concern' on the [IUCN Red List](#). However, while the UK gannet population is currently increasing (growth rates of 2-3% per annum) there is considerable uncertainty in regards the future population trajectory of gannet in face of HPAI. This is

particularly the case at an EIA scale, as the population includes numerous Scottish colonies that have been severely impacted by HPAI.

Natural England advise that although the predicted impact has decreased since SEP&DEP, in the face of uncertainty around the true level of impact and the future population trajectory **we remain unable to rule out a significant adverse impact.**

Kittiwake

As for gannet, the Applicant has recalculated collision mortality for other projects using an updated avoidance rate of 0.993 (as advised by Natural England for the stochastic CRM) whereas SEP&DEP used 0.992 (as advised by Natural England for the Basic Band model), except for projects where the avoidance rate is unknown, in which case existing values were retained. This has resulted in the total number of collisions up to and including SEP&DEP reducing from 3,009.5 to 2,472.6. The cumulative total collisions for all projects including Outer Dowsing is 3,755 as per Table 13, higher than the total cumulative impact at SEP&DEP. Therefore, our position at SEP&DEP remains unchanged, and **we remain unable to rule out a significant adverse impact.**

Sandwich tern

The Applicant presents two scenarios for cumulative assessment for Sandwich tern – one using as-consented project parameters and one using as-built project parameters. For the reasons set out in our submission into the Sheringham and Dudgeon Extensions examination [REP8-102], we do not consider it appropriate to use as-built project parameters, and have therefore presented the cumulative total based on as-consented project parameters in Table 14.

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