

Date: 16 June 2023
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Your ref: EN010098



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Dear Sir/Madam,

Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010

Application by Ørsted Hornsea Project Four Limited (“the Applicant”) for an Order granting Development Consent for the proposed Hornsea Project Four Offshore Wind Farm (“Hornsea Project Four”)

The following constitutes Natural England’s formal statutory response to the Secretary of State’s Request for Information (RFI) dated 18th May 2023. To inform this response Natural England have reviewed the following submissions from the Applicant’s 17th May 2023 response to RFI dated 5th April 2023:

- G13.1 Applicant's Response Letter to RFI dated 05 April 2023
- G13.2 Technical Note Impact of Protective Provisions on Seabird Modelling
- G13.3 Appendix to Technical Note Impact of Protective Provisions on Seabird Modelling
- F2.7 Outline Marine Monitoring Plan TRACKED

Natural England has been invited to comment upon:

3. The updated assessments of impacts on the ornithology features of the Flamborough and Filey Coast SPA in the protective provisions scenarios provided, and whether this would alter any previous advice from Natural England in relation to adverse effect on the integrity of any of these features.

Annex I sets out Natural England’s integrity judgements on a representative selection of the Scenarios, based on the impact assessments submitted by the Applicant, which we consider to be sufficient to provide updated advice on. Should DESNZ be minded to consent one of the Scenarios, it will be necessary for the Applicant to provide an updated impact assessment of

impacts on FFC SPA features, once an indicative layout is identified but prior to any final design being confirmed. This is needed promptly to confirm the scale of any compensatory requirements that DESNZ might wish to secure, and to inform the in-combination assessments of other plans and projects. We invite DESNZ to consider how best to secure such a submission in the DCO/dML.

4. The Applicants proposal to remove Gravity Base Structures from the project design envelope and the monitoring and adaptive management commitments, including the proposed changes to the Outline Marine Monitoring Plan.

Natural England have welcomed ongoing discussion with the Applicant regarding the Hornsea Project 4 array and potential impacts on the Flamborough Front. We appreciate that this is a complex issue, with emerging and growing evidence indicating that clusters of offshore windfarms could cause large-scale impacts to seasonal stratification, which in turn could have cascading effects on nutrient dynamics, primary production and the marine ecosystem. Given the important role played by the Flamborough Front as an area of high pelagic productivity that attracts seabirds and marine mammals to the area each year, and the potential overlap of the Hornsea Array with the frontal system, we have therefore advised that there is an urgent need to better understand how the array might interact with the Flamborough Front, both alone and in combination with other projects.

Natural England welcomes the Applicant's commitment to remove gravity base structures from the project design envelope, which will significantly reduce the risks of wake-related effects and enhanced turbulent mixing impacting upon the functioning of the Flamborough Front. Whilst this will significantly reduce the risk of adverse effects on FFC SPA and a wider range of MPA receptors, there remains residual concerns regarding the impacts of marine processes that will require before-after post-consent monitoring. Natural England have engaged constructively with the Applicant to develop monitoring proposals, which remain in line with our advice provided during the Examination. We agree with the Applicant that specific, physical adaptive management measures are not practicable for impacts of this nature, however we consider that any impacts identified through the monitoring process should theoretically end with the removal of monopiles at decommissioning.

Having reviewed the submitted Outline Marine Monitoring Plan, we welcome the proposed pre- and post-construction monitoring for Smithic Bank and look forward to reviewing the survey reports. We also welcome the proposed near-field and far-field monitoring of the Flamborough Front and broadly agree with its content. However, we note that on page 17 of the plan, it is stated that there will be '*no requirement for further post-construction monitoring of Hornsea Four*' following the provision of the 5-year post-construction report. Natural England do not support this approach and advise that the requirement for further monitoring should be dependent upon the findings of the monitoring report. Therefore, we recommend that there is a review after the 5-year period, including a discussion of the evidence in a joint workshop between the Applicant, MMO, Cefas, Natural England (and leading experts where possible) to determine further actions as necessary.

We also note "*A standalone report will be prepared covering a pre-construction baseline characterisation (1 year), construction (1 year) and a post-construction/operational (5 years) comparison...*". Given both the baseline characterisation and construction phases are

predicted to last for longer than one year, and the nature of the survey data (pre-existing, open-source satellite data) we recommend these monitoring phases cover longer than one year to better inform understanding of the presence and location of the Flamborough Front relative to the Hornsea Four array area.

We also note should DESNZ be minded to consent one of the Scenarios, the worst case scenario for marine process impacts assessed in the Environmental Statement will no longer be accurate. We advise that these assessments will need to be updated and subject to further HRA, in consultation with the SNCB, as part of the post-consent condition discharge for the final array area layout.

If you have any queries regarding our advice, please contact me using the details provided below.

Yours faithfully,

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Annex 1: Natural England's comments on the revised assessments for the protective provisions scenarios considered

1. Executive Summary

In this Annex we provide a review of the updated assessments of impacts on the ornithology features of the Flamborough and Filey Coast Special Protection Area (FFC SPA) for the protective provision scenarios considered, following Natural England's advised approach to the impact assessments. We include updated positions in relation to adverse effect on integrity (AEoI) for Northern gannet (hereafter gannet), black-legged kittiwake (kittiwake), common guillemot (guillemot), razorbill and the breeding seabird assemblages. We also include updated positions on the implications of the assessment outputs on compensation requirements and adequacy.

Natural England welcome the consideration of reduced project footprint areas under the protective provision options and, in line with the mitigation hierarchy, the associated reductions in predicted impacts under several of these scenarios. We are supportive of the Applicant's view that several of the original 13 scenarios would result in minimal changes the impact assessments, and therefore have not considered these. We acknowledge the Applicant's view that Scenarios 10-13 would render the Project financially unviable, however, as it represents the largest potential reduction in the array area, we have included Scenario 13 in our review.

1.1 Summary of assessment considerations

1.1.1 Submitted assessments and methods

Natural England have consulted with the Applicant on the methods applied for this submission, and agree with the approach adopted. We consider the information supplied in the documents to be sufficient to inform an assessment of the protective provision scenarios considered.

We note the Applicant's continued position that Natural England's approach is over-precautionary and does not align with guidance for other recent offshore wind decisions. Natural England have provided extensive justification for our position in relation to the approach taken to the assessment for the Hornsea Project 4 project in the following submissions:

- Deadline 5 Submission - Additional guidance on the assessment of guillemot and razorbill displacement impacts for the Hornsea Project Four Offshore Wind Farm [REP5-115]
- Deadline 7 Submission - Natural England's End of Examination Position on Offshore Ornithology [REP7-104]

During our review of the submitted documents, we noted a likely error in the labelling of tables in the Applicant's submission G13.2 Technical Note: Impact of Protective Provisions on Seabird Modelling. Based on previous submissions, we consider the Applicant has likely mislabelled the counterfactuals provided within the PVA Tables in the submission. Thus, we have interpreted the Counterfactual of Final Population Size (CFPS) as the Counterfactual of Growth Rate (CGR) and vice versa. The same appears to have happened with the labelling

of the columns reporting the associated reductions in growth rate (per annum) and final population size compared to baseline population (after 35 years) and we have again adjusted our interpretation accordingly.

1.1.2 Important considerations for the assessment

- Importance of the Hornsea Four project area to guillemot and razorbill

We highlight to the Secretary of State that the proposed project falls within close proximity to FFC SPA and, as evidenced through the ornithological baseline characterisation, is used by exceptional numbers of guillemot and razorbill at specific times of the year, significantly higher than observed for any previous offshore wind farm in English waters. Given the proximity to FFC SPA, it is likely that the vast majority of these birds originate from the SPA. Further, they are present in the array area during the important chick-rearing and moult period, when both adults and chicks are flightless and vulnerable to potential impacts. Thus, Natural England are concerned that Hornsea Four falls within an area of 'functional importance' for guillemot and razorbill features of the FFC SPA. This has led to the requirement to develop a bespoke approach to the assessment of displacement impacts, which otherwise risks underestimating the predicted impacts on FFC SPA. We also again highlight that provision for bespoke project guidance where needed is anticipated in the SNCB guidance (Statutory Nature Conservation Bodies, 2022).

- Latest colony counts for FFC SPA

We welcome the Applicant's reference to the latest guillemot and razorbill count data for FFC SPA (Clarkson, et al. 2022), provided to them by Natural England. We consider that the guillemot population has continued to grow in-line with the long-term average, but that the razorbill population has shown exceptional growth since 2017. However, we draw the Secretary of State's attention to the fact that these most recent counts do not provide any insights in relation to the potential impacts of Highly Pathogenic Avian Influenza (HPAI, discussed further below).

Natural England consider that it is unlikely that the current population growth rates will be sustainable as the densities of seabirds using the finite available breeding habitat and resources increases, particularly in light of climate change and other anthropogenic (e.g. continued offshore wind development and prey harvesting) and more natural pressures (e.g. pathogens and predation). A reduction in good quality nesting habitat available and competition for other resources as populations increase may ultimately influence productivity, as suggested by the general decline in productivity rates exhibited by guillemot since the start of monitoring (Cope, et al. 2022; Clarkson, et al. 2022). This indicates that the growth of the colony may be being supported by immigration from other colonies, which may also be unsustainable. Whilst razorbill productivity has not shown such a clear trend, with large inter-annual fluctuations and differences between Bempton Cliffs and Flamborough Head, there does still appear to be a long-term trend of reduced productivity, which may speculatively be linked to the increase in populations.

- Highly Pathogenic Avian Influenza (HPAI) H5N1

HPAIs impact on seabird populations, including the designated FFC SPA features assessed in relation to Hornsea Project 4, remains a significant source of uncertainty and concern. HPAI was officially confirmed by DEFRA in late August 2022 in two kittiwake at FFC SPA, but evidence of impacts were seen earlier in gannet, from July onwards, with mortality in both adults and chicks being significant (Cope et al. 2022). Indeed, Cope et al (2022) suggests gannet productivity had been significantly impacted at FFC SPA in 2022. However, potential additional breeding adult mortality remains to be quantified, requiring continued monitoring. It is likely that, with higher densities of birds nesting in close proximity, the risk of transmission may increase, leading to more significant impacts in certain areas. Natural England consider the additional impacts associated with HPAI could contribute to a reduction in resilience in the species considered in this assessment, including potentially impacting population growth rates for both guillemot and razorbill.

- Other sources of uncertainty

Natural England highlight that there is considerable uncertainty within the assessment process relating to:

- abundance estimates;
- parameters used to estimate impacts;
- behavioural responses of birds to this project;
- lack of quantitative assessments relating to potential indirect effects, particularly relating to the Flamborough Front and forage fish availability;
- potential redistributions of birds resulting from the construction and operation of the nearby Hornsea Project 1 and 2 Offshore Wind Farms, and
- effects of climate change.

Please see our end of Examination position which provides further detailed discussion on these sources of uncertainty [[REP7-104](#)]. As such, and as required of assessments, we have adopted a precautionary approach which we consider is proportionate to this uncertainty, as well as the importance of FFC SPA and the suggested importance of the Hornsea Project 4 area to specific designated features utilising the area at key times of year.

- Uncertainty relating to indirect effects

Natural England welcome the commitment to remove gravity base structures as a foundation type for the turbines and consider that this will mitigate some of the uncertainty surrounding indirect effects on important seabird species. However, we highlight that there remain residual concerns relating to any indirect effects associated even with the revised scenarios considered here, particularly where the density of turbines could be increased.

1.2 Updated HRA conclusions

For reference, we have provided a summary of Natural England's most recent positions prior to these updated assessments in Table 1. A summary of our position on HRA conclusions for each of the new protective provision scenarios assessed is provided in Table 2. The reasoning behind these revised conclusions is provided in Sections 2.1.1, 2.1.2, 2.2.1 and 2.2.2 of the Detailed Comments, for gannet, kittiwake, guillemot and razorbill respectively.

Table 1: Natural England’s most recent HRA positions based on the end of Examination evaluation modified following review of additional information supplied by the Applicant in responses to RFIs (G9.2 Applicants Response to RFI dated 16 December 2022 & G12.2 Revised Ornithological Figures). Conclusions where we are unable to rule out AEol are highlighted accordingly.

Species	Project alone	In-combination with consented plans and projects	In-combination with consented plans and project + SEP & DEP, Rampion 2 and, where included, Berwick Bank.
Gannet	No AEol	No AEol	No AEol
Kittiwake	No AEol	Unable to rule out AEol	Unable to rule out AEol
Guillemot	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
Razorbill	No AEol	Unable to rule out AEol	Unable to rule out AEol
Breeding seabird assemblage	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol

Table 2: Natural England’s current HRA position relating to FFC SPA features based on the protective provision scenarios considered by the Applicant. Conclusions where we remain unable to rule out AEol are highlighted accordingly.

Species	Scenario	Project alone	In-combination with consented plans and projects	In-combination with consented plans and project + SEP & DEP, Rampion 2 and, where included, Berwick Bank.
Gannet	All	No AEol	No AEol	No AEol
Kittiwake	All	No AEol	Unable to rule out AEol	Unable to rule out AEol
Guillemot	1	No AEol	Unable to rule out AEol	Unable to rule out AEol
	2	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	5	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	6	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	8	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	9	No AEol	Unable to rule out AEol	Unable to rule out AEol
	13	No AEol	Unable to rule out AEol	Unable to rule out AEol
Razorbill	1	No AEol	No AEol	No AEol
	2	No AEol	Unable to rule out AEol	Unable to rule out AEol
	5	No AEol	Unable to rule out AEol	Unable to rule out AEol
	6	No AEol	No AEol	No AEol
	8	No AEol	No AEol	No AEol
	9	No AEol	No AEol	No AEol
	13	No AEol	No AEol	No AEol
Breeding seabird assemblage	1	No AEol	Unable to rule out AEol	Unable to rule out AEol
	2	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	5	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	6	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	8	Unable to rule out AEol	Unable to rule out AEol	Unable to rule out AEol
	9	No AEol	Unable to rule out AEol	Unable to rule out AEol
	13	No AEol	Unable to rule out AEol	Unable to rule out AEol

For **FFC SPA gannet**, under all new scenarios the predicted impacts on gannet decreased and our position remains unchanged for this feature of FFC SPA: **no AEol for all scenarios assessed**.

For **FFC SPA kittiwake**, Natural England consider that any additional in-combination impacts on kittiwake would result in us being unable to rule out AEol and, whilst some scenarios resulted in reduced predicted impacts, they were not fully mitigated. Thus, for kittiwake, our position remains: **unable to rule out AEol for all scenarios assessed in-combination with consented plans and projects** (including or excluding SEP & DEP, Rampion 2 and Berwick Bank.)

For **FFC SPA guillemot**, scenarios 1, 9 and 13 (and by proxy 10-12) result in considerable reductions in predicted project alone impacts. **Were Scenarios 1 or 9-13 consented, this would allow us to rule out AEol for the project alone**. The remaining scenarios do not result in significant decreases in impacts and we are therefore unable to rule out AEol for these for the project alone. The in-combination impacts, combined with the other factors discussed, remain sufficient for us to be **unable to rule out AEol for all scenarios assessed in-combination with consented plans and projects** (including or excluding SEP & DEP, Rampion 2 and Berwick Bank).

For **FFC SPA razorbill**, the predicted reductions in impacts are comparatively smaller for scenarios 1, 9, and 13 compared to guillemot. However, **were Scenarios 1, 6 or 8-13 consented, this would allow us to rule out AEol for the project in-combination** (including or excluding SEP & DEP, Rampion 2 and Berwick Bank).

1.3 Updated position on derogations

For reference, we have provided the adult mortality impact associated with each scenario following Natural England’s advised assessment approach in Table 3. We have also included the end of Examination mortality for comparison. It is important to note that these values are the numbers of additional adult, breeding individuals that will need to be recruited to address the reduced contribution that FFC SPA will make to the National Site Network (NSN) population because of the impacts of Hornsea Project 4. They do not factor in requirements with respect to compensation ratios, the number of chicks that will need to be produced/fledge to ensure that the required number of adults survive to adulthood, or address uncertainties regarding connectivity between the sites for compensation delivery, FFC SPA and the wider NSN.

Table 3: Predicted annual mortality of adults for FFC SPA species for which we are unable to rule out AEol, either alone or in-combination, for each scenario.

Scenario	Impact total to be considered for derogations		
	Kittiwake	Guillemot	Razorbill
End of Exam.	43	1131	114
1	33	780	NA
2	43	1117	113
5	45	1102	108
6	45	1078	NA
8	50	978	NA
9	35	765	NA
13	38	625	NA

As noted in Section 1.2, should Scenarios 2-5 be consented, there would be no change in our HRA conclusions across all species. Whilst impact reductions are achieved for these scenarios (excluding kittiwake), they are minimal and would not meaningfully change our previous advice on the required quantum of compensation measures.

Under all of the scenarios assessed, we do not consider that the change in impact levels for kittiwake are sufficient to alter our end of Examination position on the kittiwake measures. We maintain that further onshore ANS implementation should not be taken forward and remain concerned about the long-term resilience of providing a single structure, however we acknowledge that the number of nest spaces proposed is broadly acceptable.

Were scenarios 1, 6 or 8-13 consented, it is Natural England's view that there would no longer be a requirement to provide compensation for razorbill, however it would be prudent for any benefits of the guillemot compensation on razorbill or indeed other SPA seabird assemblage species to be monitored. Understanding the wider benefits would be of great assistance for the offshore wind sector as a whole, given the potential future requirements of development to bring forward compensatory proposals for FFC SPA razorbill or other site/species combinations.

Whilst the scale of compensation required for FFC SPA guillemot would be reduced under Scenarios 1, 9 and 13 to 780, 765 or 625 breeding adults respectively, the requirements do remain challenging given our advice on the effectiveness and relevance of the proposed measures (see our Deadline 7 final position on compensatory measures [\[REP7-102\]](#) and response to SoS's Request for Information dated 9th February 2023 ([Here](#))). Although these Scenarios reduce the risk, a shortfall would almost certainly remain between the predicted level of impact and scale of compensation likely to be achievable by the measures, and we would therefore continue to advise that both compensation measures for auks (bycatch reduction and predator eradication) would need to be delivered as a package. We also consider that to increase the likelihood of the predator eradication providing meaningful measures, all the islands preliminarily identified by the Applicant should be subject to eradication efforts, rather than 'holding back' some islands for adaptive management.

Even then, should DESNZ be minded to consent the project, careful consideration should be given to addressing the need to secure additional measures through adaptive management mechanisms given the significant potential for shortfalls to arise, either in terms of enhanced delivery of the proposed measures or the identification and implementation of additional ones.

2. Detailed comments

2.1 Northern Gannet and black-legged kittiwake

Table 4 provides a summary of the predicted impacts, as assessed following Natural England’s guidance and interim collision risk modelling guidance, for gannet and kittiwake apportioned to FFC SPA for the protective provision scenarios assessed by the Applicant. We note that the predicted collision mortalities are based on the assumption that 180 turbines will still be installed, even in what are often much reduced areas; should this number be reduced, we would expect collision estimates to reduce accordingly.

2.1.1 Gannet

Under all protective provision scenarios assessed, the combined predicted impacts for gannet decrease. Therefore, our position in relation to gannet AEoI remains unchanged: **No AEoI for the gannet feature based on the project alone, in-combination with other projects or in-combination with other projects + SEP & DEP, Rampion 2, and Berwick Bank.**

2.1.2 Kittiwake

For kittiwake, predicted impacts under protective provision scenarios 1, 2, 9 and 13 decrease relative to the end of Examination scenario, and increase for scenarios 5, 6, and 8. The additional predicted collisions associated with the latter scenarios are relatively small and would not result in a change to our position of no AEoI for the project alone. However, Natural England currently consider any additional in-combination impacts on the kittiwake feature of FFC SPA would result in not being able to rule out AEoI, therefore our current position remains unchanged: **No AEoI for the kittiwake feature based on the project alone, but Unable to rule out AEoI based on the project in-combination with other consented plans or projects (either excluding or including SEP & DEP, Rampion 2, and Berwick Bank).**

Table 4: Predicted project alone impacts on gannet and kittiwake apportioned to FFC SPA, based on the end of Examination scenario and additional protective provision scenarios assessed by the Applicant as detailed in G13.2 Technical Note: Impact of Protective Provisions on Seabird Modelling. All values are based on Natural England’s preferred approach to the assessments. For gannet, we have included impacts resulting from the application of a displacement rate of 80% and mortality rates of 1% and 2%, and collision impacts have been calculated based on Natural England’s interim guidance and have been adjusted assuming a 70% macro-avoidance rate. For kittiwake collision estimates, the results are based on Natural England’s interim guidance.

Protective Provision scenario	Gannet					Kittiwake
	Displacement		Collision (70% MA)	Combined displacement and collision (with 70% MA)		Collision
	80% D and 1% M	80% D and 2% M		80% D and 1% M	80% D and 2% M	
End exam.	7.6	15.1	2.7	10.3	17.8	43.1
1	6.8	13.6	3	9.8	16.6	33.1
2	7.5	15.1	2.7	10.2	17.8	42.9
5	7.3	14.5	2.7	10	17.2	44.8
6	7	14.1	2.8	9.8	16.9	45.4

8	5.5	11.1	2.8	8.3	13.9	50.3
9	6.8	13.6	3	9.8	16.6	34.7
13	4.7	9.4	3.1	7.8	12.5	37.6

2.2 Guillemot and Razorbill

Natural England note that all protective provision scenarios result in a decrease in predicted impacts on the guillemot and razorbill features of FFC SPA relative to the end of Examination scenario, as assessed following Natural England’s guidance and 70% displacement and 5% mortality rate (Figure 1). For guillemot, the greatest predicted reductions result from Scenarios 1, 9 and 13, which equate to array area extent reductions of 117 km² (28% of array), 170 km² (44%) and 250 km² (73%) respectively. We concur with the Applicant’s view that Scenario 9 provides minimal additional benefit over Scenario 1 with respect to impact reductions, with only a further 1.4% reduction in impacts gained (15 guillemot per annum), despite it involving a much larger reduction to the array area extent (28% loss versus 44% loss). For razorbill, Scenarios 8 (121 km²; 30%) and 13 result in the greatest reductions (Figure 1). We note that whilst not assessed here, we would expect that Scenarios 10-12 would result in impact reductions between the range observed for Scenarios 9 and 13.

As well as the reduced quantitative impacts derived from the displacement matrices, Natural England also highlights that the scales of impact associated with these scenarios would also reduce (though not remove) our associated concerns about the loss of functionally-linked habitat used by auks in the chick-rearing and moult period, as this is reduced by 28-73%.

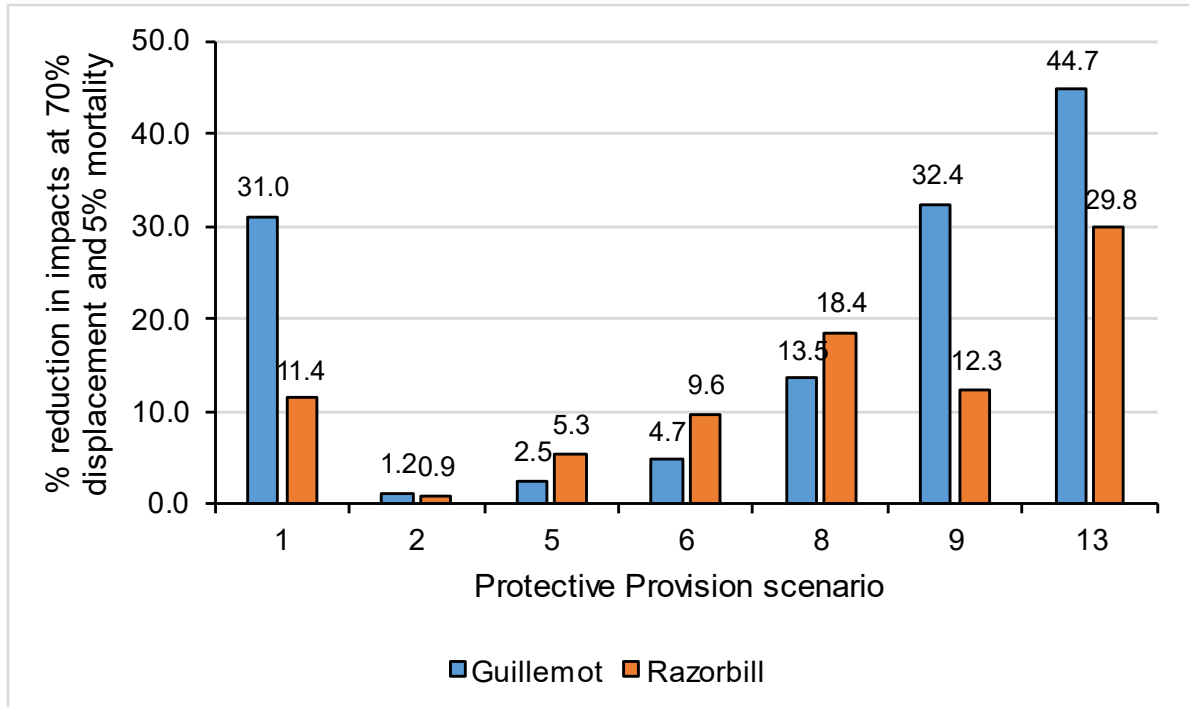


Figure 1: Variation in the influence of the assessed Protective Provision scenarios on predicted project impacts, based on Natural England’s advised approach for guillemot (displacement impacts at 70% displacement and 5% mortality) and approach to apportioning for razorbill (displacement impacts at 70% displacement and 5% mortality).

We evaluate how the different scenarios influence our conclusions on AEoI for guillemot and razorbill separately in the following sections.

2.2.1 Guillemot

For reference, the Conservation Objective for the guillemot population of the FFC SPA is to maintain the size of the breeding population at a level which is above 83,124 breeding adults, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. Natural England note that the latest colony count for guillemot is 149,980 breeding adults in 2022, compared with 121,754 in 2017 (Clarkson, et al. 2022). These high-level objectives should be considered in context with the Supplementary Advice on Conservation Objectives from which we consider the following attributes relevant for guillemot:

- **Breeding population: abundance** – Maintain the size of the breeding population at a level which is above 41,607 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- **Disturbance caused by human activity:** Restrict the frequency, duration and/or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.
- **Supporting habitat: extent and distribution of supporting habitat for the breeding season:** Maintain the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding).
- **Supporting habitat: food availability (bird):** Maintain the distribution, abundance and availability of key food and prey items (e.g. Sandeel, herring, sprat) at preferred sizes.
- **Connectivity with supporting habitats:** Maintain safe passage of birds moving between nesting and feeding areas.

As per our end of Examination position, we advise that the Secretary of State considers the potential impacts on guillemot (and razorbill) with respect to this full set of attributes, not just population abundance, drawing on the supporting notes in the attribute descriptions, which contain site-specific detail.

Table 5 provides a summary of the predicted impacts, following Natural England's preferred approach to the assessment and indicative displacement (70%) and mortality rate (5%) for each scenario, and includes the end of Examination estimates for comparison.

We have extracted counterfactuals of population growth rate (CGR) and final population size (CFPS), with associated reductions in growth per annum and reductions in final population size after 35 years, from the Applicant supplied PVA results based on the closest impacts assessed (Table 5).

Table 5: Predicted project alone, in-combination with consented projects, and in-combination with consented projects + SEP & DEP and Rampion 2 impacts on the guillemot FFC SPA population based on the end of Examination scenario and additional Protective Provision scenarios assessed by the Applicant as detailed in G13.2 Technical Note: Impact of Protective Provisions on Seabird Modelling. All values are based on the Natural England advised approach to the assessment of impacts for guillemot at Hornsea Project 4. Impacts are considered using a displacement rate of 70% and mortality rate of 5% for Hornsea Project 4. For in-combination

impacts, all other projects have been assessed at 70% displacement and 2% mortality. Applicant derived density independent counterfactuals of growth rate (CGR) and final population size (CFPS), and associated metrics, are based on the 2017 census data for the starting populations. Applicant cells are highlighted where the predicted reduction in population growth rate per annum exceeds 0.5%, or in dark pink where it exceeds 1%.

Guillemot FFC SPA								
Assessment description	Protective Provision scenario	Additional mortality (ind.)	% Baseline mortality using 2017 census data	Closest Applicant assessed impact scenarios	CGR	Reduction in growth rate per annum	CFPS	Reduction in final pop. Size compared to baseline pop. (after 35 years) (%)
Project alone (70% & 5%)	End Exam.	1131	15.2	1250	0.989	1.15	0.660	34.04
	1	780	10.5	750	0.993	0.69	0.780	22.05
	2	1117	15	1000	0.991	0.92	0.717	28.29
	5	1102	14.8	1000	0.991	0.92	0.717	28.29
	6	1078	14.5	1000	0.991	0.92	0.717	28.29
	8	978	13.2	1000	0.991	0.92	0.717	28.29
	9	765	10.3	750	0.993	0.69	0.780	22.05
	13	625	8.4	500	0.995	0.46	0.847	15.28
In-combination with consented projects (70% & 5% for Hornsea 4 70% & 2 % for all other projects)	End Exam.	1480	19.9	1500	0.986	1.38	0.607	39.34
	1	1130	15.2	1250	0.989	1.15	0.660	34.04
	2	1467	19.8	1500	0.986	1.38	0.607	39.34
	5	1452	19.6	1500	0.986	1.38	0.607	39.34
	6	1427	19.2	1500	0.986	1.38	0.607	39.34
	8	1327	17.9	1250	0.989	1.15	0.660	34.04
	9	1114	15	1000	0.991	0.92	0.660	34.04
	13	975	13.1	1000	0.991	0.92	0.717	28.29
In-combination with consented projects + SEP & DEP, and Rampion 2. (70% & 5% for Hornsea 4 70% & 2% for all other projects)	End Exam.	1498	20.2	1500	0.986	1.38	0.607	39.34
	1	1147	15.4	1250	0.989	1.15	0.660	34.04
	2	1484	20	1500	0.986	1.38	0.607	39.34
	5	1470	19.8	1500	0.986	1.38	0.607	39.34
	6	1445	19.5	1500	0.986	1.38	0.607	39.34
	8	1345	18.1	1250	0.989	1.15	0.660	34.04
	9	1132	15.2	1250	0.989	1.15	0.660	34.04
	13	993	13.4	1000	0.991	0.92	0.717	28.29

2.2.1.1 Revised Project alone assessment

In our final Examination position on ornithology [REP7-104] Natural England concluded that AEoI could not be ruled out on FFC SPA guillemot for the Hornsea 4 project alone, based on the CGR derived from the population viability analysis (PVA), and taking into account a range of other factors summarised in the Executive Summary above (and see REP7-104 for more information).

- Adult mortalities

1,131 adult mortalities per annum were predicted at the end of Examination, based on 70% displacement and 5% mortality using Natural England's advised impact assessment method. Scenarios 2, 5, 6 and 8 do not significantly affect the predicted level of mortality from the Examination assessment. However, Scenarios 1, 9, and 13 reduce the impact level to 780, 765 and 625 respectively, representing 31%, 32% and 45% reductions in impact.

- Population growth rate

We previously concluded that AEoI could not be ruled out alone, on the basis that the colony would need to achieve growth rates of over 1% per annum throughout the 35-year project lifetime to avoid declining from its current level. Even if the growth rates per annum were above 1% but below 2% per annum over the project lifetime, there remained concerns that the SPA guillemot population could decline from its current level.

These concerns are not addressed by Scenarios 2, 5, 6 and 8, in which case our advice that an AEoI cannot be ruled out still stands. However, for Scenarios 1, 9 and 13, the predicted reduction in growth rate decreases from 1.15% per annum to 0.69% (1 and 9) and 0.46% (13). Such impacts are unlikely to result in the population reducing below its current level over the life of the wind farm assuming 1%, or greater, population growth.

- Population size

Whilst not provided during the Examination, the Applicant's submission (G13.2) discloses that the 'end of Examination' impacts would have resulted in the population size being 34.04% smaller than what it would have been in the absence of Hornsea Project 4. Scenarios 2, 5, 6 and 8 only achieve a minor reduction in this level, whereas for Scenarios 1, 9 and 13, the CFPS values indicate a more substantial reduction in impacts to 22.05% (1 and 9) and 15.28% (13).

- Other factors taken into consideration

Natural England remains concerned about the loss of functionally-linked sea and areas of importance to guillemot in the sensitive chick-rearing/moult stage. However, we do acknowledge that Scenarios 1, 9 and 13 provide a reduction in the extent of potential losses (117 km², 170 km² and 250 km² respectively). These potential impacts are therefore reduced, though not removed for these scenarios. We do not consider that Scenarios 2, 5, and 6 provide a meaningful reduction to the array area extent to reduce concerns with respect to functionally linked sea.

The removal of gravity base foundations (GBF) from the project envelope also significantly reduces concerns regarding impacts on marine processes, though residual concerns regarding the impacts associated with other foundation types remain.

Following our position at the end of Examination [REP7-104], we note that the FFC SPA guillemot colony has continued to exhibit robust population growth that suggests a long-term average growth rate of 4% between 1969 and 2022 (Clarkson, et al. 2022). However, we highlight that guillemot productivity has been declining at the SPA since 2009, indicating that recent population increases may be driven by immigration from elsewhere. As well as the observed productivity decline, density dependent factors such as competition for prey resources could become a limiting pressure on the population. We also note that many colonies in Scotland have experienced significant declines in guillemot populations of around 4% per annum between Seabird 2000 and 2015-17 (JNCC Seabird Monitoring Programme 'SMP' data, see: Guillemot (*Uria aalge*) | JNCC – Adviser to Government on Nature Conservation). Therefore, whilst recent growth rates observed at FFC SPA are encouraging, we consider it unlikely that they can be sustained in the long term.

Please also see Section 1.1.2 of the Executive Summary for further assessment considerations.

- **Conclusions**

Of the Scenarios presented, only 1, 9 and 13 are considered to significantly reduce the impacts on FFC SPA guillemot. Under these three scenarios, were the colony to achieve a growth rate above 0.69% per annum, the CGR outputs indicate a reasonable prospect of the population not declining from its current level. Whilst the population growth rate currently being achieved by the colony is unlikely to be sustained over the lifetime of the project, we consider it plausible that a growth rate above 0.69% could be achieved. The lower CFPS values and the reduction of risk to functionally-linked sea areas and to marine processes also provide some additional confidence regarding the likely level of impact.

Accordingly, in the event of one of Scenarios 1, 9 and 13 being consented, Natural England's advice would be that there is no AEol alone on FFC SPA guillemot.

2.2.1.2 Revised Project in-combination assessment

- Adult mortalities

As noted above, Scenarios 1, 9 and 13 result in a significant reduction in impacts based on the CGR values, representing 31%, 32% and 45% reductions in impact respectively. However, the contribution of Hornsea Project 4 to the in-combination total remains substantial, even with the reduced predicted impacts.

- Population growth rate

Whilst Scenarios 1, 9 and 13 do reduce Hornsea Project 4's contribution to the in-combination total, the PVA outputs for these Scenarios indicate that the colony would still need to achieve

growth rates above 0.92% (or 1.15% for Scenario 1) throughout the 35-year project lifetime to avoid declining from its current level due to in-combination impacts.

- Population size

The Applicant's submission (G13.2) discloses that the 'end of Examination' impacts would have resulted in the population size being 39.34% smaller than what it would have been in the absence of Hornsea Project 4. Scenarios 2, 5, 6 and 8 provide no reduction in this level, whereas for Scenarios 1, 9 and 13, the CFPS values indicate a more substantial reduction in impacts to 34.04% (1 and 9) and 28.29% (13).

- Other factors

As noted above, the reductions in array area associated with the removal of GBF do reduce the levels of concern regarding impacts to functionally linked seas and to marine processes – but do not remove them altogether. This is particularly with regard to the loss of sea areas with functional importance to guillemot in the sensitive chick-rearing/moult period.

- **Conclusions**

We do not have sufficient confidence that the guillemot population can sustain a growth rate in the region of 1% or above over the lifetime of the project given the background of current and future pressures. Whilst Scenarios 1, 9 and 13 do reduce the in-combination total, and the potential loss of functionally-linked seas, the reductions do not rule out the potential for in-combination impacts to result in a deterioration of the population from its current level.

Accordingly, Natural England's advice remains that an AEol cannot be ruled out in-combination with other plans and projects even if one of the above Scenarios were to be consented. This is the case when the in-combination totals include only consented projects ('up to and including Hornsea 4'), or with consented projects + Sheringham & Dudgeon Extensions (SADEP) + Rampion 2 OWF.

2.2.1.3 Implications for Compensatory Measures

Whilst the scale of compensation required for FFC SPA guillemot would be reduced under Scenarios 1, 9 and 13, we advise that the requirements remain challenging given our advice on the effectiveness and relevance of the proposed measures (see our Deadline 7 final position on compensatory measures [[REP7-102](#)] and response to SoS's Request for Information dated 9th February 2023 ([Here](#))). Under these scenarios, 780 (Scenario 1), 765 (Scenario 9) or 625 (Scenario 13) additional breeding adult guillemot per annum would need to be provided to address the reduced contribution that FFC SPA will make to the national site network (NSN) population, reduced from 1,131 at the end of Examination. It is important to note that these numbers do not factor in requirements with respect to compensation ratios, the number of chicks that will need to be produced/fledge to ensure that the required number of adults survive to adulthood and are recruited, or uncertainties regarding connectivity between the sites for compensation delivery, FFC SPA and the wider NSN.

There is significant potential for a shortfall to remain between the predicted levels of impact and scale of compensation achievable by the measures, and we would therefore continue to

advise that both compensation measures for auks (bycatch reduction and predator eradication) would need to be delivered as a package. We also consider that to increase the likelihood of the predator eradication providing meaningful measures, all the islands preliminarily identified by the Applicant should be subject to eradication efforts, rather than 'holding back' some islands for adaptive management.

Even then, should DESNZ be minded to consent the project, careful consideration should be given to addressing the need to secure additional measures through adaptive management mechanisms given the significant potential for shortfalls to arise, either in terms of enhanced delivery of the proposed measures or the identification and implementation of additional ones.

2.2.2 Razorbill

The Conservation Objective for the razorbill population of the FFC SPA is to maintain the size of the breeding population at a level which is above 21,140 breeding adults, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. Natural England note that the latest colony count for razorbill is now 61,345 breeding adults in 2022, compared with 40,506 in 2017 (Clarkson, et al. 2022). As with guillemot, we advise the Supplementary Advice on Conservation Objectives for this feature are also considered when interpreting the outcomes of the assessments.

Table 6 provides a summary of the predicted impacts, following Natural England’s advised approach to the assessment, based on displacement and mortality rates of 70% and 5% respectively for this project, for each scenario and includes the end of Examination estimates for comparison.

We have extracted counterfactuals of population growth rate (CGR) and final population size (CFPS), with associated reductions in growth per annum and reductions in final population size after 35 years, from the Applicant-supplied PVA results based on the closest impacts assessed (Table 6).

Table 6: Predicted project alone, in-combination with consented projects, and in-combination with consented projects + SEP & DEP and Rampion 2 impacts on the razorbill FFC SPA population based on the end of examination scenario and additional protective provision scenarios assessed by the Applicant as detailed in G13.2 Technical Note: Impact of Protective Provisions on Seabird Modelling. All values are based on the Natural England advised approach to the apportioning of impacts for razorbill at Hornsea Project 4. Impacts are considered using a displacement rate of 70% and mortality rate of 5% for Hornsea Project 4. For in-combination impacts, all other projects have been assessed at 70% displacement and 2% mortality. Applicant derived density independent counterfactuals of growth rate (CGR) and final population size (CFPS), and associated metrics, are based on the 2017 census data for the starting populations. Applicant cells are highlighted where the predicted reduction in population growth rate per annum exceeds 0.5%.

Razorbill FFC SPA								
Assessment description	Protective Provision scenario	Additional mortality	% Baseline mortality using 2017 census data	Closest Applicant assessed impact scenarios	CGR	Reduction in growth rate per annum (%)	CFPS	Reduction in final pop size compared to baseline pop (after 35 years) (%)
Project alone (70% & 5%)	End Exam.	114	0.9	125	0.996	0.37	0.877	12.34
	1	101	0.8	100	0.997	0.29	0.900	9.98
	2	113	0.9	125	0.996	0.37	0.877	12.34
	5	108	0.8	100	0.997	0.29	0.900	9.98
	6	103	0.8	100	0.997	0.29	0.900	9.98
	8	93	0.7	100	0.997	0.29	0.900	9.98
	9	100	0.8	100	0.997	0.29	0.900	9.98
	13	80	0.6	75	0.998	0.22	0.924	7.61
In-combination	End Exam.	201	1.6	200	0.994	0.58	0.810	18.98

with consented projects (70% & 5% for Hornsea 4 70% & 2 % for all other projects)	1	188	1.5	175	0.995	0.51	0.832	16.83
	2	200	1.6	200	0.994	0.58	0.810	18.98
	5	195	1.5	200	0.994	0.58	0.810	18.98
	6	190	1.5	200	0.994	0.58	0.810	18.98
	8	180	1.4	175	0.995	0.51	0.832	16.83
	9	187	1.5	175	0.995	0.51	0.832	16.83
	13	168	1.3	175	0.995	0.51	0.832	16.83
In-combination with consented projects + SEP & DEP, Rampion 2, and Berwick Bank ¹ (70% & 5% for Hornsea 4 70% & 2 % for all other projects)	End Exam.	215	1.7	225	0.993	0.66	0.789	21.10
	1	202	1.6	200	0.994	0.58	0.810	18.98
	2	214	1.7	225	0.993	0.66	0.789	21.10
	5	208	1.6	200	0.994	0.58	0.810	18.98
	6	204	1.6	200	0.994	0.58	0.810	18.98
	8	194	1.5	200	0.994	0.58	0.810	18.98
	9	201	1.6	200	0.994	0.58	0.810	18.98
	13	181	1.4	175	0.995	0.51	0.832	16.83

2.2.2.1 Revised Project alone assessment

In our Examination final position [REP7-104], Natural England concluded that an AEoI from Hornsea Project 4 alone could be ruled out. This was on the basis that the impacts of the project alone were not predicted to result in a reduction in growth rate greater than 0.5%. As the Scenarios brought forward would reduce the project alone impact further on FFC SPA razorbill, this conclusion remains unchanged.

2.2.2.1 Revised Project in-combination assessment

At the end of Examination Natural England advised that an AEoI could not be ruled out on FFC SPA razorbill in combination with other plans and projects. This was based on an in-combination impact total of 201 adult mortalities per annum. Our integrity judgement reflected concerns that the colony would need to achieve growth rates of around 1% per annum throughout the 35-year project lifetime to avoid declining from its current level. Whilst there was increased certainty that such growth rates might be achieved by the SPA razorbill colony compared to guillemot, there was insufficient confidence in this to rule out AEoI when considering uncertainties in the assessment as well as current and future pressures.

- Adult mortalities

¹ Berwick Bank was submitted after the close of the Hornsea Project 4 Examination, and therefore is not included in the 'end of Examination' assessment values. Due to estimated impacts now being available for the project, it has been included in the revised in-combination assessments.

Scenarios 2 and 5 only achieve small reductions (1 and 6 individuals respectively) in the predicted number of adult mortalities from the end of Examination total for Hornsea Project 4 of 114 adults per annum, based on 70% displacement and 5% mortality using Natural England's advised impact assessment method. However, for Scenarios 1, 6, 8, 9 and 13, the predicted adult mortalities are reduced to 101, 103, 93, 100 and 80, reductions of 11%, 10%, 18%, 12% and 30% respectively. With the exception of Scenarios 6 and 8, it is notable that these Scenarios are less effective in reducing the impacts of Hornsea Project 4 on razorbills compared to guillemot (Figure 1). This likely reflects the higher densities of guillemot present and may also result from variations in distributions of the two species or in the methods used to estimate abundance. Guillemot densities were produced with a model-based approach compared with a design-based one for razorbill.

- Population growth rate

For Hornsea Project 4 plus consented projects, Scenarios 1, 8, 9 and 13 result in a modest decrease in the predicted reduction in growth rate, from 0.58% per annum to 0.51%.

When Hornsea Project 4 is considered in-combination with proposed as well as consented projects, the predicted 'end of Examination' reduction in growth rate is 0.66%, reflecting an increased predicted impact of 215 adult mortalities per annum. This chiefly reflects the additional impacts of Sheringham and Dudgeon OWF extensions (4 adult mortalities per annum) and Berwick Bank OWF (8 adult mortalities per annum). Here, Scenarios 1, 8, 9 result in a predicted reduction in growth rate to 0.58%, with only Scenario 13 resulting in a further lowering to 0.51%.

- Population size

Whilst not provided during the Examination, the Applicant's submission (G13.2) discloses that the PVA predicts that the in-combination total for 'Hornsea Project 4 plus consented projects' would result in the population size being 18.98% smaller than what it would have been in the absence of those impacts. Scenarios 2, 5, and 6 do not reduce this, whereas for Scenarios 1, 8, 9 and 13, a modest reduction to 16.83% is achieved.

The equivalent value for 'Hornsea 4 plus consented and proposed projects' is 21.10%. Scenario 2 does not reduce this. All other Scenarios lower this to 18.98%, with Scenario 13 resulting in a further reduction of impacts to 16.83%.

- Other factors taken into consideration

Natural England remains concerned about the loss of functionally-linked sea areas of importance to razorbill in the sensitive chick-rearing/moult stage. However, we do acknowledge Scenarios 1, 8, 9 and 13 provide further significant reductions in the extent of the array area (by 117 km², 121 km², 170 km² and 250 km² respectively). These potential impacts are therefore reduced, particularly given the lower densities of razorbill present, though not removed.

The removal of GBFs also significantly reduces concerns regarding impacts on marine processes, though residual concerns regarding the impacts of other foundation types remain.

We highlight that the razorbill feature of FFC SPA has continued to exhibit strong growth in recent years (Clarkson, et al. 2022), relative to the overall increase of 5.1% per annum between colony counts from 1987 and 2022. However, annual growth rates between counts since 1987 have fluctuated between 0.7% (1987-2000) and, most recently, 9.5% (2017-2022) per annum. The colony growth rates suggest that the razorbill colony is currently very productive, and we note that, compared to guillemot, whilst overall productivity has shown a slight declining trend since 2009, this reduction has been less pronounced with some periods of poor productivity being linked to corvid, guillemot and kittiwake activity (Cope et al. 2022). It is highly unlikely, however, that current growth rates are sustainable in the long term as other factors (e.g. nest and prey availability) will become limiting as the colony approaches carrying capacity.

Moreover, in the context of other UK colonies, the growth seen at FFC SPA has been exceptional, with many Scottish colonies experiencing declines, and much lower growth rates being recorded at other English and Welsh colonies (JNCC Seabird Monitoring Programme 'SMP' data, see: Razorbill (*Alca torda*) | JNCC – Adviser to Government on Nature Conservation).

Thus, there is reduced uncertainty regarding the continued growth and resilience of the FFC SPA population, even when the impacts arising from Hornsea Project 4 in-combination with consented and proposed projects. This increases our confidence in our end of Examination position that we do not consider it likely that the population growth rate will fall much below around 1-2% per annum over the lifetime of the project.

Please also see Section 1.1.2 of the Executive Summary for further assessment considerations.

- **Conclusions**

As noted in our Deadline 7 response, the predicted impacts on razorbill present a lower risk of adverse effects compared to guillemot. The potential reductions of impacts associated with Scenarios 1, 6, 8, 9 and 13 do provide further comfort regarding this.

Natural England therefore considers that there is a greater degree of confidence that the FFC SPA razorbill colony can achieve growth rates in the region of 1% over the lifetime of the project compared to guillemot. Even if growth rates fell below 1%, we consider it unlikely that growth rates will fall as low as 0.5% per annum over the project lifetime. Accordingly, in the light of meaningfully reduced impacts on adult mortality, reductions in the loss of functionally linked sea and the removal of GBFs reducing the potential for marine processes impacts, **Natural England advises that should one of Scenarios 1, 6, 8, 9 or 13 be consented, we will be able to conclude no AEol in-combination 'up to and including Hornsea 4'.**

When the impacts of proposed projects are included in the in-combination total, the level of risk to the FFC SPA razorbill population increases, with the reductions associated with the above Scenarios neutralised to a varying extent. Nevertheless, in the light of the substantial growth of the razorbill colony observed between 2017 and 2022, coupled with a more robust productivity trend compared to guillemot, for the above Scenarios (including the associated reductions in loss of functionally-linked sea areas) we consider there to be reasonable

prospects of the colony being able to accommodate the increased impacts from 'all projects' without the colony declining from current levels.

Accordingly, Natural England advises that should one of Scenarios 1, 6, 8, 9 or 13 be consented, we will be able to conclude no AEOI in-combination for 'Hornsea 4 plus consented plus proposed projects' for FFC SPA razorbill. However, we highlight that Scenarios 6 and 8 perform poorly with respect to adverse effects on FFC SPA guillemot, failing to avoid a risk of adverse effects arising from the project alone.

2.2.2.2 Implications for Compensatory Measures

Compensation would no longer be required for FFC SPA razorbill if Scenarios 1, 6, 8, 9 or 13 were consented, we do consider it appropriate for the Applicant to include ongoing monitoring of the FFC SPA razorbill colony within their monitoring proposals, to confirm the growth rates do indeed stay above 0.5% per annum.

2.3 Seabird assemblage

The seabird assemblage at FFC SPA is the single largest mainland seabird colony in the UK and the largest in England. Direct impacts on the FFC SPA seabird assemblage arise from Hornsea Project 4 due to collision risk and displacement effects. In addition, there are reduced but still notable impacts on functionally-linked sea areas, and residual uncertainty regarding impacts on the Flamborough Front, primary productivity and thereby forage fish availability for FFC SPA seabirds.

Key attributes within the Supplementary Advice on Conservation Objectives for FFC SPA follow, together with a short analysis:

2.3.1 Assemblage of species: abundance

At classification the site supported 216,720 individuals, with the latest census recording 333,152 individual seabirds using the site (Clarkson et al, 2022). Kittiwake, gannet, guillemot and razorbill contribute the majority of those individuals. As noted above, Natural England is unable to rule out adverse effects on FFC SPA kittiwake in-combination and guillemot in-combination, and can only rule out adverse on guillemot alone and razorbill in-combination should some of the protective provision scenarios be consented.

If Scenarios 1 or 9-13 were consented, Natural England considers that an AEoI on the seabird assemblage from the project alone could be avoided, due to the reduced impacts on guillemot in particular. However, the impacts of Hornsea Project 4 contribute a substantial proportion of the in-combination AEoI identified for guillemot, and accordingly Natural England considers an AEoI with other plans and projects on the SPA seabird assemblage cannot be ruled out even if those Scenarios were secured.

2.3.2 Assemblage of species: diversity

As noted during the Examination, it is not expected that Hornsea Project 4 will result in any one species being lost to the assemblage, and so the diversity of the seabird assemblage will be maintained.

2.3.3 Supporting habitat: extent and distribution of supporting habitat for the breeding season; and Supporting habitat: quality of supporting breeding habitat

The Hornsea Project 4 proposal has the potential to exclude significant numbers of assemblage birds, particularly guillemot, from the array area, reducing the extent and distribution of supporting habitat. Scenarios 1, 9 and 13 have the potential to reduce, though not remove, the potential loss of supporting habitat. Equally, the removal of gravity base foundations as a foundation option reduces the risk of the array, through disrupting marine processes, affecting the Flamborough Front and therefore the quality of supporting habitat. Whilst reducing the risk of AEoI on the seabird assemblage alone, it cannot be concluded that the loss of supporting habitat would not make some contribution to the in-combination AEoI.

2.3.4 Conclusion

Natural England cannot rule out adverse effects on the assemblage feature in-combination with other plans and projects, due to potentially significant levels of impact on the assemblage abundance in-combination with other plans and projects.

References

- Clarkson, K., Aitken, D., Cope, R., & O'Hara, D. (2022). Flamborough & Filey Coast SPA: 2022 seabird colony count and population trends. Available online: [Birds and Wave & Tidal Stream Energy](#) [REDACTED]
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