Written Representation

for the

Royal Society for the Protection of Birds

Submitted for Deadline 2

29 March 2022

Planning Act 2008 (as amended)

In the matter of:

Application by Hornsea Project Four Limited for an Order

Granting Development Consent for the Hornsea Project Four Offshore Wind Farm

Planning Inspectorate Ref: EN010098

RSPB Registration Identification Ref: 20029909

Contents

1. Introduction

The RSPB

1.1. The Royal Society for the Protection of Birds (the RSPB) was set up in 1889. It is a registered charity incorporated by Royal Charter and is Europe's largest wildlife conservation organisation, with a membership of over 1.1 million[1]. The principal objective of the RSPB is the conservation of wild birds and their habitats. The RSPB therefore attaches great importance to all international, EU and national law, policy and guidance that assist in the attainment of this objective. It campaigns throughout the UK and internationally for the development, strengthening and enforcement of such law and policy. In so doing, it also plays an active role in the domestic processes by which development plans and proposals are scrutinised and considered, offering ornithological and other wider environmental expertise. This includes making representations to, and appearing at, public inquiries and hearings during the examination of applications for development consents.

The RSPB's interest in offshore wind development

1.2. Faced with the threats of climate change to the natural world the RSPB considers that a low-carbon energy revolution to reach net zero is essential to safeguard biodiversity. However, inappropriately designed and/or sited developments can also cause serious and irreparable harm to biodiversity and damage the public acceptability of the necessary low-carbon energy transition technologies.

1.3. The RSPB recognises the significant role that offshore wind will play in decarbonising our energy systems and the renewed urgency with which this must happen. Installing this technology at the scale and pace needed is no easy task: there are significant challenges rooted in the planning frameworks and the state of our seas which threaten both nature *and* our ability to reach net zero.

1.4. The UK is of outstanding international importance for its breeding seabirds, including northern gannet for which the UK supports over 50% of the world population and around 10% of the world populations of kittiwake and puffin. The UK is also of international importance for its non-breeding seabirds and waterbirds. As with all Annex I and regularly migratory species, the UK has particular responsibility under the Birds Directive[2] to secure the conservation of these birds.

1.5. The available evidence suggests that the main risks of offshore wind farms for birds are collision, disturbance/displacement, barriers to movement (e.g. migrating birds, or disruption of access between the breeding areas and feeding areas), and habitat change particularly with associated changes in food availability and the cumulative and in-combination effects of these across multiple wind farms.

1.6. Such impacts are avoidable, and the RSPB has spent considerable time working with stakeholders in the UK offshore wind industry to ensure that decisions about deployment of

[1] https://www.rspb.org.uk/about-the-rspb/about-us/how-the-rspb-is-run/annualreport/ Accessed 29 March 2022.
[2] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version) (the Birds Directive).

renewable energy infrastructure take account of environmental constraints and seek to avoid or minimise impacts wherever possible. The RSPB therefore strongly advocates the use of rigorous, participative environmental assessments to inform the development of projects.

Scope of written submission

1.7. This Written Submission covers the following:

- The nature conservation importance of the seabirds affected by the Hornsea Project Four Offshore wind farm scheme
- Legislation and policy background
- Offshore ornithology
- Derogation case: the RSPB's approach to evaluating compensation measures under the Conservation of Habitats and Species Regulations 2017 (as amended)
- RSPB detailed comments on the Applicant's specific compensation proposals
- RSPB comments on the draft Development Consent Order (DCO) and draft Deemed Marine Licence (DML).

1.8. In compiling this Written Representation, the RSPB has considered the application documents, including in particular the following:

Section 4 (offshore ornithology) and Appendix A

- APP-017: A2.5 Environmental Statement Volume A2 Chapter 5 Offshore and Intertidal Ornithology
- APP-074: A5.5.1 Environmental Statement Volume A5 Annex 5.1 Offshore and Intertidal Ornithology Baseline Characterisation Report
- APP-075: A5.5.2 Environmental Statement Volume A5 Annex 5.2 Offshore Ornithology Displacement Analysis
- APP-076: A5.5.3 Environmental Statement Volume A5 Annex 5.3 Offshore Ornithology Collision Risk Modelling
- APP-077: A5.5.4 Environmental Statement Volume A5 Annex 5.4 Offshore Ornithology Population Viability Analysis
- APP-079: A5.5.6 Environmental Statement Volume A5 Annex 5.6 Offshore Ornithology MRSea Report
- APP-177: B2.2 Report to Inform Appropriate Assessment Part 11: Appendix H: Offshore Ornithology Flamborough and Filey Coast (FFC) Special Protection Area (SPA) Population Viability Analysis.

Sections 5 and 6 and Appendices B and C: Derogation case – compensatory measures

- APP-057: A4.6.1 Compensation Project Description
- APP-060: A4.6.4 Compensation Commitments Register
- APP-181: B2.4 Summary Statement
- APP-183: B2.6 Compensation measures for FFC SPA: Overview
- APP-184: B2.6.1 Compensation measures for FFC SPA: Compensation Criteria
- APP-185: B2.6.2 Compensation measures for FFC SPA: Prey Resource Evidence
- APP-186: B2.7 FFC SPA: Gannet and Kittiwake Compensation Plan

- APP-187: B2.7.1 Compensation measures for FFC SPA: Offshore Artificial Nesting: Ecological Evidence
- APP-188: B2.7.2 Compensation measures for FFC SPA: Offshore Artificial Nesting Roadmap
- APP-189: B2.7.3 Compensation measures for FFC SPA: Onshore Artificial Nesting: Ecological Evidence
- APP-190: B2.7.4 Compensation measures for FFC SPA: Onshore Artificial Nesting Roadmap
- APP-191: B2.7.5 Compensation measures for FFC SPA: Artificial Nesting: Site Selection and Design
- APP-192: B2.7.6 Outline Gannet and Kittiwake Implementation and Monitoring Plan
- APP-193: B2.8 FFC SPA: Gannet Guillemot and Razorbill Compensation Plan
- APP-194: B2.8.1 Compensation measures for FFC SPA: Bycatch Reduction: Ecological Evidence
- APP-195: B2.8.2 Compensation measures for FFC SPA: Bycatch Reduction: Roadmap
- APP-196: B2.8.3 Compensation measures for FFC SPA: Predator Eradication: Ecological Evidence
- APP-197: B2.8.4 Compensation measures for FFC SPA: Predator Eradication: Roadmap
- APP-198: B2.8.5 Compensation measures for FFC SPA: Fish Habitat Enhancement: Ecological Evidence
- APP-199: B2.8.6 Compensation measures for FFC SPA: Fish Habitat Enhancement: Roadmap
- APP-200: B2.8.7 Outline Gannet, Guillemot and Razorbill Implementation and Monitoring Plan.

Response to Applicant's documents submitted at Deadline 1

1.9. The RSPB is aware that the Applicant submitted a number of new and updated documents at Deadline 1 of relevance to the RSPB's concerns, in particular the following new documents:

- REP1-061: G1.33 - Predator Eradication Island Suitability Assessment: Bailiwick of Guernsey
- REP1-063: G1.41 - Calculation methods of the Hornsea 4 Proposed Compensation Measures for features of the FFC SPA
- REP1-064: G1.42 - Gannet Bycatch Reduction: Evidence Review
- REP1-065: G1.43 - Examination Deliverables Summary
- REP1-069: G1.47 - Auk Displacement and Mortality Evidence Review
- REP1-071: G1.50 - Compensation measures: Updated position statement.

1.10. In REP1-065 the Applicant sets out its timetable for submitting additional new documents to the Examination:

- Deadline 2 (29 March 2022):
  - Gannet Displacement and Mortality report
  - MRSea Baseline Sensitivity Report – Gannet

- Fulmar Assessment: Alone and incombination: Farne Islands SPA
- Clarification of BDMPS values for guillemot and puffin
- Assessment of common scoter and red-throated diver within the ECC.

- Deadline 3 (21 April 2022):
  - Assessment Sensitivity Report
  - Indirect effects: Forage Fish and Seabirds
  - Further consideration on lighting requirements
  - In-combination watching brief report.
- Deadline 5 (20 June 2022):
  - Predator eradication Implementation Studies Update
  - Bycatch Reduction Implementation Study 2021/22 Summary.
- Deadline 6 (27 July 2022)
  - Fish Habitat Enhancement: Implementation Study and Fish Connectivity Survey Summary.

1.11. As raised during the preliminary meeting, the RSPB would welcome further information on what each of the above documents will cover. This is in order to be able to understand more fully the implications of each in respect of the concerns raised by the RSPB and others.

1.12. The RSPB also repeats its requests made at the Preliminary Meeting that the Applicant provides a timetable for when it proposes to update key application documents related to offshore ornithology and compensation measures. This combined with the information on the scope of the new documents will enable the RSPB to plan its work to be able to respond appropriately in order to assist the examination and Examining Authority.

1.13. Whilst we welcome (as set out in the PM Note[3]) the Applicant advising that "it would be providing a list of documentation at Deadline 1, and its current programme would be to submit further such documentation by Deadline 2 at the latest" we continue to be concerned about such large quantities of new information coming in after the start of the Examination, particularly after the deadline for written representations and wish to repeat our concerns about how it will be possible for Interested Parties to review this new environmental information, update their positions and ensure the Examination Authority is provided with comments on it.

1.14. The RSPB notes that:

- The date for submitting the documents at Deadline 3 is just one week before the scheduled Issue Specific Hearing 5 (marine and coastal ornithology) and Issue Specific Hearing 6 (Habitats Regulations Assessment);
- The date for submitting new documents on bycatch reduction and predator eradication compensation measures work at Deadline 5 falls after ISH6 on the Habitats Regulations Assessment;
- No indication is given when new or updated information will be provided on:
- Offshore ornithology matters, with particular reference to baseline ornithological data and population viability analysis;

[3] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-000957-Hornsea%20Project%20Four%20PM%20Note%2022022022.pdf. Accessed 29 March 2022.

- Derogation matters relating to compensation measures (various, including specific location and design matters relating to all compensation measures proposed, including offshore artificial nesting structures for kittiwake).

1.15. Therefore, the RSPB has serious concerns over whether sufficient updated information will be available in a timely manner for it to be able to make constructive contributions to ISH5 and ISH 6 at the end of April 2022.

2. The nature conservation importance of the seabirds affected by the Hornsea Project Four offshore wind farm scheme

Introduction

2.1. The UK is of outstanding international importance for its breeding seabirds, including northern gannet for which the UK supports over 50% of the world population and around 10% of the world population of black-legged kittiwake (Table 1). As with all Annex I and regularly occurring migratory species, the UK has particular responsibility under the Birds Directive[4] to secure the conservation of these important seabird populations.

The Flamborough and Filey Coast SPA

2.2. The Flamborough Head and Bempton Cliffs Special Protection Area (SPA) was designated under Article 4(2) of the Birds Directive as an SPA in 1993 due to the presence of 83,700 pairs of black-legged kittiwake (*Rissa tridactyla*), representing 4% of the Eastern Atlantic breeding population. In 2001, the UK SPA Review[5] found that it also qualified under Article 4(2) as a site regularly supporting at least 20,000 seabirds, as at the time of designation the site regularly supported 305,784 individual seabirds including: Atlantic puffin (*Fratercula arctica*), razorbill (*Alca torda*), guillemot (*Uria aalge*), European herring gull (*Larus argentatus*), gannet (*Morus bassanus*), and kittiwake. Kittiwake and the seabird assemblage are therefore the qualifying features of this SPA.

2.3. In January 2014, Natural England held a consultation on proposals to change the SPA. The proposals comprised changes to the designated site boundary including extending it to cover part of the Filey Coast (hence the change in its name to Flamborough and Filey Coast SPA) and changes to the numbers of qualifying species. This new site was formally designated in August 2018[6], incorporating the Flamborough Head and Bempton Cliffs SPA.

Table 1: Summary of ornithological interest of the SPAs

Feature	Count (period)	% of subspecies or population (pairs)	Interest Type
Flamborough Head and Bempton Cliffs SPA			
Black-legged kittiwake *Rissa tridactyla*	83,700 pairs (1987)	4% Western Europe	Migratory
Flamborough and Filey Coast SPA			
Black legged kittiwake *Rissa tridactyla*	44,520 pairs 89,041 breeding adults (2008-2011)	2% North Atlantic	Migratory
Northern gannet	8,469 pairs	2.6%	Migratory

[4] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version) (the Birds Directive).

[5] Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds). 2001. The UK SPA network: its scope and content. JNCC, Peterborough.

[6] [redacted] 29 March 2022.

Feature	Count (period)	% of subspecies or population (pairs)	Interest Type
Morus bassanus	16,938 breeding adults (2008-2012)	North Atlantic	
Common guillemot *Uria aalge*	41,607 pairs 83,214 breeding adults (2008-2011)	15.6% (*Uria aalge albionis*)	Migratory
Razorbill *Alca torda*	10,570 pairs 21,140 breeding adults (2008-2011)	2.3% (*Alca torda islandica*)	Migratory
	Count period	***Average number of individuals***	
Seabird assemblage	***2008-2012***	***215,750***	

2.4. Natural England has set out conservation advice for the Flamborough and Filey Coast SPA, including Conservation Objectives[7] and Supplementary Advice on Conservation Objectives[8]. Below, we summarise the key aspects of that conservation advice.

Conservation objectives

2.5. The Conservation Objectives for the Flamborough and Filey Coast SPA are as follows:

"…to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The populations of each of the qualifying features
- The distribution of the qualifying features within the site."

2.6. Since this site was originally designated as an SPA in 1993, the national populations of both kittiwake and some assemblage species have suffered substantial declines. For example, the UK breeding kittiwake population has reduced by 65% since 1986 (State of the UK's Birds, 2020[9]). Within the SPA there has been an approximate 40-50% reduction in the kittiwake population from the original 83,700 breeding pairs (designation population, 1987) to an average of 44,520 breeding pairs between 2008 and 2011. A single year full colony count in 2017 indicated 51,535 pairs across the FFC SPA.[10]

[7] [redacted]). Accessed 18 March 2022.

[8] [redacted] Accessed 18 March 2022.

[9] Burns F, Eaton MA, Balmer DE, Banks A, Caldow R, Donelan JL, Douse A, Duigan C, Foster S, Frost T, Grice PV, Hall C, Hanmer HJ, Harris SJ, Johnstone I, Lindley P, McCulloch N, Noble DG, Risely K, Robinson RA, Wotton S (2020) The state of the UK's birds 2020. The RSPB, BTO, WWT, DAERA, JNCC, NatureScot, NE and NRW, Sandy, Bedfordshire

[10] [redacted] Accessed 18 March 2022.

2.7. The current SPA citation does not reflect this substantial decline in the population of breeding kittiwake or other seabird species included under the assemblage feature (see below for more detail on the recent kittiwake population trends including productivity).

Supplementary Advice on Conservation Objectives (dated 13 March 2020)

2.8. Natural England's Supplementary Advice on the Conservation Objectives for the Flamborough and Filey Coast SPA[11] identifies, for each SPA feature, key attributes and targets. Attributes[12] are the ecological characteristics or requirements of the classified features within the SPA and deemed to best describe the site's ecological integrity. If safeguarded this will enable achievement of the Conservation Objectives and favourable conservation status for all the designation features, including the assemblage.

2.9. Table 2 below sets out, for each qualifying feature, the targets in respect of the following attributes:

- Breeding population: abundance;
- Connectivity with supporting habitats;
- Disturbance caused by human activity;
- Extent and distribution of supporting habitat for the breeding season; and
- Food availability.

2.10. The RSPB considers these attributes and targets are particularly relevant to consideration of the Hornsea Four scheme as they respectively relate to:

- the population levels at which the features should be maintained or restored to;
- the need to:
  - maintain or restore safe passage of birds moving between their nesting and feeding areas;
  - reduce/avoid disturbance to foraging, feeding, moulting and/or loafing birds;
  - maintain the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle; and
  - maintain or restore the distribution, abundance and availability of key food and prey items.

Table 2: Flamborough and Filey Coast SPA: supplementary advice on conservation objectives – breeding population (abundance) and connectivity with supporting habitats.

SPA feature	Attribute	Target	Season	Site specific comments
Kittiwake (breeding)	Breeding population: abundance	Restore the size of the breeding population at a level which is above 83,700 breeding pairs, whilst avoiding deterioration from its current level as indicated	Breeding (summer season)	Current population figures indicate major decline since designation population count (1987). Ongoing trend of low breeding productivity.

[11] [redacted]). Accessed 18 March 2022.

[12] [redacted] Accessed 18 March 2022.

SPA feature	Attribute	Target	Season	Site specific comments
		by the latest mean peak count or equivalent.		
	Connectivity with supporting habitats	Restore safe passage of birds moving between nesting and feeding areas	Year-round	NE has advised regulators that predicted in-combination collision mortality from consented or proposed offshore wind farms could adversely affect the integrity of the SPA.
	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	Breeding (summer season)	This species may be vulnerable to impacts of habitat loss, displacement and collision from offshore activities.
	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) at existing level.	Year round – to ensure the habitat remains suitable for when the feature is present	Colony reliant on chalk and limestone ledges, water column out to 2km for feeding and loafing, and the offshore environment for feeding.
	Supporting habitat: food availability	Restore the distribution, abundance and availability of key food and prey items (e.g. sandeel, sprat, cod, squid, shrimps) at preferred sizes.	Year-round	Kittiwake feed mainly on small shoaling fish near the sea surface. Evidence for the wider North Sea indicates that availability of sandeels is likely to be a factor in kittiwake decline. Recent evidence suggests that the decline in sandeel in the area around Flamborough may be attributable to fishing activity. Sea surface temperate rise (related to climate change) may be an additional factor in reduction in sandeel availability.
Gannet (breeding)	Breeding population: abundance	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.	Breeding (summer season)	Latest colony count (2017) showed increase to 13,392 Apparently Occupied Nests (AON).
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas.	Year-round	Evidence that gannet may be vulnerable to collision with offshore turbines. They are also sensitive to displacement effects.

SPA feature	Attribute	Target	Season	Site specific comments
	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	Breeding (summer season)	This species may be vulnerable to impacts of habitat loss, displacement and collision from offshore activities.
	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) at: current extent.	Year round – to ensure the habitat remains suitable for when the feature is present	Colony reliant on 5km of high cliffs at Bempton, water column out to 2km for feeding and loafing, and the offshore environment for feeding.
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. Herring, mackerel, sprat, sandeel) at preferred sizes.	Year-round	
Guillemot (breeding)	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.	Breeding (summer season)	[No post-designation colony count noted.]
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas.	Year-round	Cumulative effect of habitat loss and displacement due to offshore developments may result in reduced breeding productivity and/or lower adult fitness and survival.
	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	Breeding (summer season)	This species may be vulnerable to impacts of habitat loss, displacement and collision from offshore activities.
	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).	Year round – to ensure the habitat remains suitable for when the feature is present	Colony reliant on chalk and limestone ledges, water column out to 2km for feeding and loafing, and the offshore environment for feeding.
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. sandeel, herring, sprat) at preferred sizes.	Year-round	Recent studies at Flamborough Head indicate that clupeid species (most likely sprats) form 91.5% of guillemot chick diet. They have also been recorded

SPA feature	Attribute	Target	Season	Site specific comments
				to forage for sandeels and gadoid species.
Razorbill (breeding)	Breeding population: abundance	Maintain the size of the breeding population at a level which is above 10,570 breeding pairs whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	Breeding (summer season)	The 2017 colony count indicated approximately 20,253 pairs across the site.
	Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas.	Year-round	Cumulative effect of habitat loss and displacement due to offshore developments may result in reduced breeding productivity and/or lower adult fitness and survival.
	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	Breeding (summer season)	This species may be vulnerable to impacts of habitat loss, displacement and collision from offshore activities.
	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).	Year round – to ensure the habitat remains suitable for when the feature is present	Colony reliant on chalk and limestone ledges, water column out to 2km for feeding and loafing, and the offshore environment for feeding.
	Supporting habitat: food availability	Maintain the distribution, abundance and availability of key food and prey items (e.g. sandeel, sprat, krill) at preferred sizes.	Year-round	Recent studies at Flamborough Head indicate that almost 90% of razorbill chick diet was sandeels, with a smaller proportion of clupeid species (most likely sprats).
Seabird assemblage (breeding)	Assemblage of species: abundance	Maintain the overall abundance of the assemblage at a level which is above 216,730 individuals whilst avoiding deterioration from its current level as indicated by the latest peak mean count or equivalent.	Breeding (summer season)	[No post-designation colony count noted.]
	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	Breeding (summer season)	Offshore: some species may be vulnerable to impacts of habitat loss, displacement and collision from offshore activities.
	Supporting habitat: extent and distribution	Maintain the extent, distribution and availability of suitable breeding habitat which supports	Year round – to ensure the habitat	

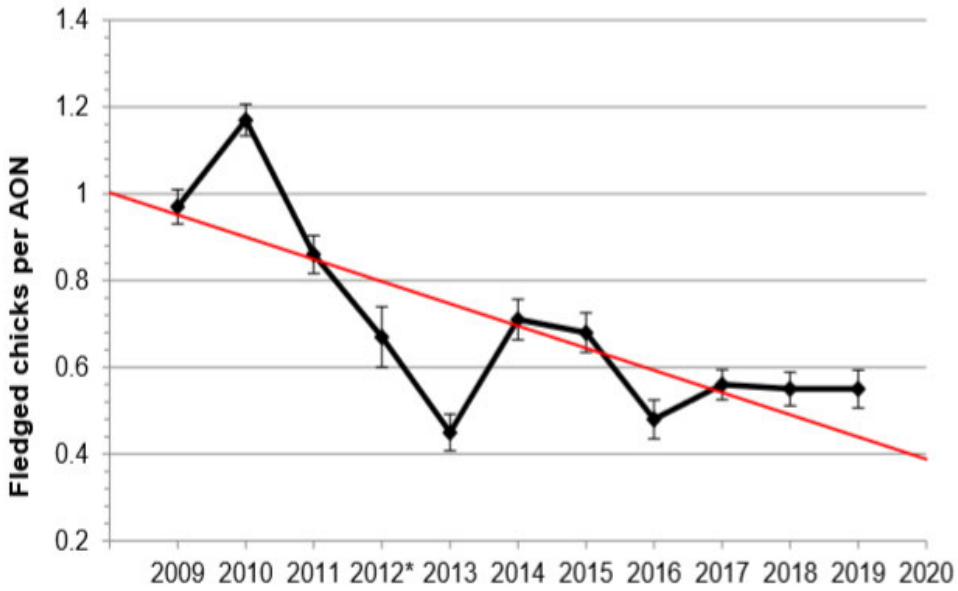
SPA feature	Attribute	Target	Season	Site specific comments
	of supporting habitat for the breeding season	the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding) current extent - (water column; vegetated sea cliffs of the Atlantic and Baltic coast; intertidal rock).	remains suitable for when the feature is present	

2.11. The RSPB considers these attributes and targets are directly relevant to the consideration of whether the SPA's conservation objective to maintain or restore site integrity can be met and the SPA achieve favourable conservation status for all its features including the seabird assemblage throughout the lifetime of the development and any subsequent period where its impacts continue to affect the SPA features.

Kittiwakes

2.12. With particular reference to the SPA kittiwake population, we note that Natural England's Supplementary Advice refers to Aitken *et al.*, 2017[13] as a source of census data showing that kittiwake productivity has declined rapidly at the SPA. More recent data from Lloyd *et al.* *(*2019)[14] confirms this trend and productivity has remained low (see Figure 1 below). As a long-lived species, such lowering in productivity will take some time before it becomes apparent in population numbers. However, if this trend continues it will have severe long-term impacts on the population growth.

Figure 1: Reproduction of Fig.3 from Lloyd et al. (2019). Flamborough/Bempton black-legged Kittiwake productivity 2009-2019, mean of plot results plus/minus standard error.



[13] Aitken, D., Babcock, M., Barratt, A., Clarkson, C. and Prettyman, S. (2017). Flamborough and Filey Coast pSPA Seabird Monitoring Programme: RSPB.

[14] Lloyd, I., Aitken, D., Wildi, J. and O'Hara, D. (2019) Flamborough and Filey Coast SPA Seabird Monitoring Programme 2019 Report. RSPB and Natural England. Pp 44.

2.13. The JNCC (2018a)[15] discusses the rapid decline in the UK kittiwake population observed since the early 1990s and links this to declining productivity and adult survival, with declines in sandeel prey and the effects of climate change on sea surface temperatures noted as likely contributory factors. Frederiksen *et al*. (2004)[16] also demonstrated the vulnerability of kittiwake populations to human activities through a study based on the Isle of May. Their population modelling showed that this population was unlikely to increase should the local sandeel fishery remain active and would be likely to decline further if sea surface temperature also increased, due to effects on both productivity and adult survival.

2.14. Given this context of continued declines in the UK kittiwake population since the early 1990s and the effect of anthropogenic impacts on adult survival and productivity, the RSPB considers that offshore windfarm mortality could add significantly to the multiple stressors affecting this population and reduce the likelihood of population recovery.

Summary

2.15. The Flamborough and Filey Coast SPA is a vital site for nationally and internationally important seabird populations. Kittiwake, gannet, guillemot, razorbill and the seabird assemblage are qualifying features of this SPA. Despite the Conservation Objectives, "to ensure that … the integrity of the site is maintained or restored as appropriate", since this site was designated in 1993 the national populations of both kittiwake and some assemblage species have suffered substantial declines.

2.16. It is vital to consider whether the SPA and its qualifying features meet the attributes and targets set by Natural England when considering whether the SPA's conservation objectives to maintain or restore site integrity can be met and the SPA achieve favourable conservation status throughout the lifetime of the development and any subsequent period where its impacts continue to affect the SPA features.

[15] [redacted].

[16] Frederiksen, M., Harris, M.P., Daunt, F., Rothery, P. and Wanless, S. 2004. The role of industrial fisheries and oceanographic change in the decline of North Sea black-legged kittiwakes. Journal of Applied Ecology 41: 1129-1139.

3. Legislation and policy background

Introduction

3.1. The suite of Energy National Policy Statements (NPSs) set out the Government's approach to ensuring the security of energy supplies and the policy framework within which new energy infrastructure proposals are to be considered. The presumption in favour of granting consent, as identified in NPS EN-1, *Overarching National Policy Statement for Energy*[17], is subject to the tests set out below in section 104 of the Planning Act 2008[18] (see NPS EN-1 paragraphs 4.1.2 and 1.1.2).

3.2. Section 104 of the Planning Act provides that an application for development consent for energy infrastructure must be decided in accordance with the relevant NPS except where in doing so it would lead to the UK:

- being in breach of its international obligations;
- being in breach of any statutory duty that applies to the Secretary of State; or would
- be unlawful;
- result in adverse impacts which would outweigh the benefits; or
- be contrary to regulations about how decisions are to be taken.

3.3. The statutory duties include the Conservation of Habitats and Species Regulations 2017[19] (the Habitats Regulations, as amended) (NPS EN-1 paragraph 4.3.1) and the wider objective of protecting the most important biodiversity conservation interests (see NPS EN-1 section 5.3 generally). It notes the Habitats Regulations' statutory protection for important sites including Ramsar sites, listed under the Ramsar Convention[20], SPAs designated under the Birds Directive and Special Areas of Conservation (SACs) designated under the Habitats Directive[21].

3.4. NPS EN-3, *National Policy Statement for Renewable Energy Infrastructure*, specifically identifies birds as a biodiversity concern to be taken into account (paragraph 2.6.59 and 2.6.68). Whilst it is stated that the designation of an area as a protected European site does not necessarily restrict the construction or operation of offshore wind farms (paragraph 2.6.69), the legislative requirements identified above are still to be met. The protection

[17] Overarching National Planning Policy Statement for Energy (EN-1): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

[18] Planning Act, 2008: http://www.legislation.gov.uk/ukpga/2008/29/contents

[19] The Conservation of Habitats and Species Regulations 2017: https://www.legislation.gov.uk/uksi/2017/1012/contents. The Conservation of Offshore Marine Habitats and Species Regulations 2017 are also relevant - https://www.legislation.gov.uk/uksi/2017/1013/contents but unfortunately Legislation.gov.uk has not been updated to reflect the changes made due to Brexit.

[20] The Convention on Wetlands of International Importance 1971. Para 5.3.9 of the NPS EN-1 confirms that for the purposes of considering development proposals affecting them, listed Ramsar sites should also, as a matter of policy, receive the same protection.

[21] Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

afforded by legislation, to which the 2008 Act and the NPSs refer, are addressed briefly below.

The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017

3.5. SACs and SPAs are protected as "European sites" in inshore waters (up to 12 nautical miles from the baselines) under provisions within the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)(as amended); and in offshore waters (i.e. from 12-200 nautical miles) under provisions within the Conservation of Offshore Marine Habitats and Species Regulations 2017 (Offshore Habitats Regulations)(as amended)[22].

3.6. The Habitats & Offshore Habitats Regulations set out the sequence of steps to be taken by the competent authority (here the Secretary of State for Business, Energy and Industrial Strategy (BEIS)) when considering authorisation for a project *likely to have an effect* on a European site and its species before deciding to authorise that project. These are as follows (with references to just the Habitats Regulations):

- Step 1: consider whether the project is directly connected with or necessary to the management of the SPA and its species (regulation 63 (1)). If not –
- Step 2: consider, on a precautionary basis, whether the project is likely to have a significant effect on the SPA and its species, either alone or in combination with other plans or projects (the Likely Significance Test) (regulation 63 (1)).
- Step 3: make an appropriate assessment of the implications for the SPA and its species in view of its conservation objectives with the aims and objectives of the requirements including the National Sites Network management objectives (reg 16A) to also be considered. There is no requirement or ability at this stage to consider extraneous (non-conservation e.g. economics, renewable targets, public safety etc) matters in the appropriate assessment (regulation 63 (1)).
- Step 4: consider whether it can be ascertained that the project will not, alone or in combination with other plans or projects, adversely affect the integrity of the SPA and its species, having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (the Integrity Test) (regulation 63 (6)).
- Step 5: In light of the conclusions of the assessment, the competent authority shall agree to the project only after having ascertained that it will not adversely affect the integrity of the SPA, alone or in combination with other plans or projects (regulation 63 (5)).
- Step 6: only if the competent authority is satisfied that, there being no alternative solutions and the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to (regulation 64(2)), may be of a social or

[22] The Conservation of Habitats and Species Regulations 2017: https://www.legislation.gov.uk/uksi/2017/1012/contents. The Conservation of Offshore Marine Habitats and Species Regulations 2017 are also relevant - https://www.legislation.gov.uk/uksi/2017/1013/contents but unfortunately Legislation.gov.uk has not been updated to reflect the changes made due to Brexit.

economic nature), they may agree to the plan or project notwithstanding a negative assessment of the implications for the European site (regulation 64 (1)).

- Step 7: in the event of the no alternative solutions and imperative reasons of overriding public interest tests being satisfied, the Secretary of State must secure that any and all necessary compensatory measures are taken to ensure that the overall coherence of the National Site Network is protected (regulation 68) taking account of the National Site Network management objectives (reg 16A, as set out below).

3.7. It is important to add that in addition to the requirements set out above, in relation to both inshore marine area and the offshore marine area, any competent authority must exercise its functions so as to secure compliance with the requirements of the Habitats Directive and the Birds Directive as set out in regulations 9 and 10, Habitats Regulations; and in particular to take such steps as it considers appropriate to secure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds[23], having regard to the requirements of Article 2 of the Birds Directive.[24] And for offshore SPAs and SACs regulation 26, Offshore Habitats Regulations requires competent authorities to exercise their functions (as far as possible) to secure steps to avoid the disturbance of species and the deterioration of habitats or habitats of species within those sites.

SPA and SAC Conservation Objectives

3.8. Under the Habitats Regulations, a site's Conservation Objectives are intrinsic to the Integrity Test when considering whether to grant consent for a plan or project – see Habitats Regulations 63(1).

3.9. In order to understand the Conservation Objectives and the Supplementary Advice in the context of Regulation 63(1) it is important to remind oneself of the role of SPAs within these legislative requirements. These protected sites are part of the requirement for special conservation measures in order to ensure that their contribution to national and international "conservation status" of the species[25] is maximised, as set out in the headline words at the start of all Conservation Objectives:

"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring…"[26]

3.10. The Conservation Objectives are to be an articulation of the contribution that it is appropriate for the SPA to make in an enduring way. It would be inconsistent with the purposes of the protection and the role of SPAs to have SPA Conservation Objectives (or the

[23] As required by Article 3, Birds Directive

[24] See regulation 9(1) and 10(1)(2)(3) and (8) of the Habitats Regulations and regulation 6 of the Offshore Regulations. Article 2 Birds Directive imposes a requirement on Member States to maintain all wild bird populations at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or if necessary, to restore the population of these species to that level (Article 2).

[25] Please see points below on the management objectives of the National Sites Network and the requirements for SPAs to ensure that the species are maintained and/or restored across their natural range.

[26] The SPA generic Conservation Objectives [redacted] Accessed 29 March 2022

interpretation of them) aiming for lower populations particularly since so many sites were designated at a time when populations were not in favourable condition.

Appropriate assessment

3.11. As part of the assessment requirements, regulation 63, Habitats Regulations (regulation 28, Offshore Habitats Regulations) require the application of the precautionary principle. Meaning that if it cannot be excluded, on the basis of objective scientific information, that it is likely to have a significant effect on an SPA or SAC and its species an appropriate assessment will be required: see *Waddenzee*.[27]

3.12. Following that appropriate assessment, a project may only be granted consent if the competent authority is convinced that it will not have an adverse effect on the integrity of the European site(s) and their species of concern, having applied the precautionary principle and taken account of the conservation objectives for those European sites and their habitats and species. *Waddenzee* confirmed that where doubt remains as to the absence of adverse effects on the integrity of the European site, approval should be refused[28] (subject to the considerations of alternative solutions, imperative reasons of overriding public interest and the provision of compensatory measures as set out in regulations 64 and 68).

3.13. An appropriate assessment requires all aspects of the project which could affect the European site, its species and its conservation objectives to be identified in the light of the best scientific knowledge in the field.[29] The competent authority,

"taking account of the conclusions of the appropriate assessment of the implications…for the site concerned, in the light of the conservation objectives, are to authorise such activity only if they have made certain that it will not adversely affect the integrity of the site. That is the case where no reasonable scientific doubt remains as to the absence of such effects"[30].

3.14. Defra Circular 01/2005 states at page 20, that the 'integrity of the site' should be defined as 'the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified'.[31] An European site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required. When looking at the 'integrity of the site', it is therefore important to take into account a range of factors, including the possibility of effects manifesting themselves in the short, medium and long-term".[32]

3.15. As is clear from the requirements of the Habitats and Offshore Habitats Regulations, the assessment of integrity is to be considered by reference to the impact of the project alone

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[27] CJEU Case-127/02; [2004] ECR-7405 at [45].
[28] [56]-[57].
[29] [61].
[30] [59].
[31] Please note the Defra Circular 01/2005 is also titled ODPM Circular 6/2005.
[32] See too the European Commission Guidance; Wind Energy Developments and Natura 2000, 2011, page 82-83, paragraph 5.5.3.

and in-combination with other plans and projects, taking account of the European site(s) conservation objectives. As clearly set out in *Waddenzee*, para 61:

> 61 In view of the foregoing, the answer to the fourth question must be that, under Article 6(3) of the Habitats Directive, an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. The competent national authorities, taking account of the appropriate assessment of the implications of mechanical cockle fishing for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects. (emphasis added)

In-combination effects and compensation for other schemes

3.16. Compensatory measures only enter the equation when it has been determined that there will be adverse effects on the integrity of the site (under regulation 63) or there is a lack of certainty as to the absence of adverse effects and the need for the competent authority to decide whether consent should be granted under regulation 64.

3.17. It therefore follows that if compensation measures have been required for a project then that project has been identified as giving rise to potential adverse impacts on the integrity of a protected site. Therefore, potential adverse effects from that project are also relevant when considering whether a later project is:

- likely to have a significant effect on a designated site, whether on its own or in combination with other plans and projects, and subsequently
- whether the competent authority can be satisfied that there will not be adverse effects on the integrity of the European site whether taken alone or in combination with other projects.

3.18. It is difficult to see on what basis the fact that compensation has been provided for potential adverse effects of the first scheme should mean that the effects of that scheme should be removed from the equation when carrying out the assessments required by regulation 63 for a later scheme, although it may well be relevant when considering whether consent should be granted under regulation 64 for the second scheme and/or what compensation measures should be required at that stage. There are two points we would stress in that context:

Firstly, the admonition of AG Sharpston in *Sweetman (No 1)* at AG47 (cited above). To exclude the adverse effects of scheme one when considering whether a later scheme would be likely *to* have significant effects / would not have an adverse effect on the integrity of a

protected site in combination with other projects would seem to risk perpetuating the "death by a thousand cuts" phenomenon discussed in that case;[33] and

Secondly, the uncertainty as to the effectiveness of measures that are designed to compensate for (for example) loss of habitat rather than to mitigate the harm which might otherwise be *caused*: see C-164/17 *Grace v Sweetman* at 52-3.

3.19. Such an approach would also seem inconsistent with the clear ruling of the CJEU in C-164/17 *Grace v Sweetman* that *compensatory* measures should not be taken into account at the Article 6(3) stage when carrying out an appropriate assessment for a particular project. It is difficult to see why the compensatory measures associated with an earlier scheme could, therefore, be taken into account (by effectively removing the adverse effects of scheme 1 from consideration) where the competent authority is deciding on a later scheme whether it was likely to have significant effects or would / would not have adverse effects on the integrity of the site in combination with other projects. We set out the material passages from that decision out below for ease of reference:

> *"50 In that regard, the Court has previously ruled that the measures provided for in a project which are aimed at compensating for the negative effects of the project cannot be taken into account in the assessment of the implications of the project provided for in Article 6(3) of the Habitats Directive…[34].*
> *51 It is only when it is sufficiently certain that a measure will make an effective contribution to avoiding harm, guaranteeing beyond all reasonable doubt that the project will not adversely affect the integrity of the area, that such a measure may be taken into consideration when the appropriate assessment is carried out[35].*
> *52 As a general rule, any positive effects of the future creation of a new habitat, which is aimed at compensating for the loss of area and quality of that habitat type in a protected area, are highly difficult to forecast with any degree of certainty or will be visible only in the future[36].*
> *53 It is not the fact that the habitat concerned in the main proceedings is in constant flux and that that area requires 'dynamic' management that is the cause of uncertainty. In fact, such uncertainty is the result of the identification of adverse effects, certain or potential, on the integrity of the area concerned as a habitat and foraging area and, therefore, on one of the constitutive characteristics of that area, and of the inclusion in the assessment of the implications of future benefits to be derived from the adoption of measures which, at the time that assessment is made, are only potential, as the measures have not yet been implemented. Accordingly, and subject to verifications to be carried out by the referring court, it was not possible for those benefits to be foreseen with the requisite degree of certainty when the authorities approved the contested development.*
> *54 The foregoing considerations are confirmed by the fact that Article 6(3) of the Habitats Directive integrates the precautionary principle and makes it possible to prevent in an*

[33] For the avoidance of doubt, we would stress that the starting point would always need to be the scheme itself – and there would need to be some effect from the scheme which when combined with effects from the earlier scheme could give rise to likely significant effects / outcome.
[34] Judgments of 15 May 2014, Briels and Others, C-521/12, EU:C:2014:330, paragraph 29, and of 21 July 2016, Orleans and Others, C-387/15 and C-388/15, EU:C:2016:583, paragraph 48
[35] See, to that effect, judgment of 26 April 2017, Commission v Germany, C-142/16, EU:C:2017:301, paragraph 38
[36] See, to that effect, judgment of 21 July 2016, Orleans and Others, C-387/15 and C-388/15, EU:C:2016:583, paragraphs 52 and 56 and the case-law cited

effective manner adverse effects on the integrity of protected areas as a result of the plans or projects being considered[37]*."*

Habitats Regulations General Duties

3.20. We would like to also highlight, in particular, the requirements in regulation 9(3)[38]:

9.— Duties relating to compliance with the Directives

(1) The appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the Directives.

…

(3) Without prejudice to the preceding provisions, a competent authority, in exercising any of its functions, must have regard to the requirements of the [Birds and Habitats] Directives so far as they may be affected by the exercise of those functions.[39]

3.21. And the further duties in Regulation 10[40]:

10.— Duties in relation to wild bird habitat

(1) Without prejudice to regulation 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers.

…

(3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom including by means of the upkeep, management and creation of such habitat, as appropriate), having regard to the requirements of Article 2 of the new Birds Directive (measures to maintain the population of bird species).

…

(7) In considering which measures may be appropriate for the purpose of securing or contributing to the objective in paragraph (3), appropriate account must be taken of economic and recreational requirements.

…

[37] See, to that effect, judgment of 15 May 2014, Briels and Others, C-521/12, EU:C:2014:330, paragraph 26 and the case-law cited

[38] https://www.legislation.gov.uk/uksi/2017/1012/regulation/9

[39] The terms of regulation 9(3) are not amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations although it needs to be read with the amended definitions of the relevant Directives and with the new regulation 9(4A) – regard must be had to any Secretary of State guidance – currently we do not believe this has been fully produced

[40] https://www.legislation.gov.uk/uksi/2017/1012/regulation/10

(8) So far as lies within its powers, a competent authority in exercising any function in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds"[41]

3.22. As mentioned above following the UK's departure from the EU these regulations have been changed to include (amongst other changes) management objectives for the National Sites Network. Although these requirements already existed, it is helpful to have them clearly within our domestic legislation.

3.23. In summary regulation 16A[42], Habitats Regulations sets out the requirements for the Network jointly and separately recognising the differences between SPAs and SACs (as set out above).

3.24. Authorities with relevant responsibilities must manage the National Site Network with a view to contributing to the achievement of the management objectives of it, namely (focusing just on SPAs):

3.25. **For SPAs** to contribute, in their area of distribution, to ensuring the survival and reproduction of:

- the species of birds listed in Annex I to the new Wild Birds Directive;
- regularly occurring migratory species of birds; and
- to contribute, to securing compliance with regulation 9(1) (as set out above).

3.26. **Overall**, take account of:

- the importance of SACs and SPAs;
- the importance of the sites for the coherence of National Site Network;
- the threats of degradation or destruction (including deterioration and disturbance of protected features) to which the sites are exposed; and
- in the case of migratory bird species, the importance of their breeding, moulting and wintering areas and staging points along their migration routes.

3.27. The RSPB believes it is essential both during the appropriate assessment and consideration of compensation measures stages for these management objectives to be taken into account.

Environmental Impact Assessment

3.28. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017[43] state that development consent cannot be granted for Environmental Impact Assessment (EIA) development unless the decision-maker has taken into account environmental information including an environmental statement which describes the significant effects, including

[41] Again the terms of regulation 10 are not amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations although it needs to be read with the amended definitions of the relevant Directives
[42] https://www.legislation.gov.uk/uksi/2017/1012/regulation/16A Accessed 29 March 2022
[43] The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017: http://www.legislation.gov.uk/uksi/2017/572/contents/made Accessed 29 March 2022

cumulative effects, of the development on the environment. This will include effects on all wild bird species whether SPA species or not.

3.29. Offshore wind farms have the potential to impact on birds through collision with rotating blades, direct habitat loss, disturbance from construction activities, displacement during the operational phase (resulting in loss of foraging/roosting area) and impact on bird flight lines (i.e. barrier effect) and associated increased energy use by birds for commuting flights between roosting and foraging areas. This is acknowledged in NPS EN-3[44]. These potential impacts have been taken into account by the RSPB and its remaining concerns with the applications are set out below, in the context of the legislative provisions summarised above, in particular those relating to appropriate assessment.

Summary

3.30. Energy National Policy Statements (NPSs) set out the Government's approach to considering new energy infrastructure. Consent for energy infrastructure is subject to tests set out in Section 104 of the Planning Act. NPS EN-3, National Policy Statement for Renewable Energy Infrastructure, specifically identifies birds as a biodiversity concern to be taken into account (paragraph 2.6.59 and 2.6.68).

3.31. There is a statutory duty to comply with the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations, as amended) which offer protection for protected sites (Ramsar, SPA, SAC) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (Offshore Regulations)(as amended). The Habitats and Offshore Regulations set out a sequence of steps to be taken by the competent authority (here the Secretary of State for Business, Energy and Industrial Strategy (BEIS)) when considering authorisation for a project *likely to have an effect* on a European site and its species before deciding to authorise that project.

3.32. We set out a series of related matters to be considered in this context, including:

- SPA and SAC Conservation Objectives;
- Appropriate assessment;
- In-combination effects and compensation for other schemes;
- Habitats Regulations General Duties;
- Environmental Impact Assessment.

[44] Paragraph 2.6.101; see paragraphs 2.6.100-110 and 2.6.58-71 generally. Effects on foraging areas outside a SPA are to be taken into account when assessing the effects on bird populations of the SPA: see *Hargreaves v Secretary of State for Communities and Local Government* [2011] EWHC 1999 (Admin), which concerned effects on pink-footed geese which commuted inland from their roosting sites in the SPA to feed on grain and winter cereal crops on fields adjacent to the proposed development site.

4. Offshore ornithology

Introduction

4.1. There are two fundamental issues with the assessment, which are:

- the manner in which the baseline site characterisation has been carried out; and
- the presentation of the outputs of the modelling of population scale impacts.

4.2. These are described below. Both mean that the assessment is inadequate, and therefore insufficient for the robust consideration required to enable a proper understanding of the likely impacts of the scheme. In addition to these fundamental inadequacies, there are also a number of issues with the assessment, again these are discussed below. The RSPB reserves the right to add to and/or amend its position on these and other aspects of the assessment in light of changes to and/or any new, information submitted by the Applicant, in particular if and when the Applicant presents information to resolve the two fundamental issues highlighted above. But for now we wanted to be clear that the assessment currently before the Examination is not fit for purpose.

4.3. The RSPB is also concerned with the prejudicial use of language throughout the assessment, whereby recommended methods and parameters are described as, for example, "overly precautionary". Where this language has been used, it is in cases that the assessment has been carried out using the SNCB recommended methods and parameters and these parameters are described as "worse case scenario". These have been drawn up in consultation with leading experts and we consider it inappropriate to constantly undermine and challenge these recommendations while presenting the Applicant's own preferred methods as the most accurate and as "evidence led". The SNCB guidance is designed to be suitably precautionary, particularly in the context of the huge amount of uncertainty inherent in the assessment process; it is not set out to be overly precautionary and is revised considering any new evidence. The Applicant does not present any new evidence that has not been considered by the SNCBs or the Secretary of State in recent decisions.

Conclusions on AEOI

4.4. As a result of methodological concerns, set out below, the RSPB considers that the impacts have not been adequately assessed and, as such consider that an adverse effect on the integrity (AEOI) on the following qualifying features of the Flamborough and Filey Coast Special Protection Area (SPA) cannot be ruled out:

Project alone – RSPB AEOI conclusions

4.5. Impacts on the following features of the Flamborough and Filey Coast SPA:

- The impact of collision mortality on the kittiwake population
- The impact of combined collision and displacement mortality on the gannet population
- The impact of displacement mortality on the guillemot population
- The impact of displacement mortality on the razorbill population

- The impact of combined collision and displacement mortality on the seabird assemblage.

Project in combination with other plans and projects – RSPB AEOI conclusions

4.6. In-combination impacts on the following features of the Flamborough and Filey Coast SPA:

- The impact of collision mortality on the kittiwake population
- The impact of combined collision and displacement mortality on the gannet population
- The impact of displacement mortality on the guillemot population
- The impact of displacement mortality on the razorbill population
- The impact of combined collision and displacement mortality on the seabird assemblage.

Baseline density calculations

4.7. A key issue that underpins the whole of the Applicant's ornithology assessment is the manner in which the spatial modelling of survey data has been carried out to obtain baseline densities to input into predictive modelling of bird collision and displacement impact mortalities. The Applicant has used the Marine Renewables Strategic Environmental Assessment (MRSea)[45] statistical package, developed by the Centre for Research into Ecological & Environmental Modelling at the University of St. Andrews, in order to derive bird density and abundance estimates from the data obtained during digital aerial survey. The RSPB is content that this is a robust method if used correctly and transparently.

4.8. However, there are a number of concerns with how the Applicant has applied the methods and a lack of clarity as to how data has been treated or whether there has been consideration of model performance. We understand, through our participation in the Expert Topic Groups, that Natural England also have a number of related concerns and anticipated that we would be involved in efforts to resolve them. However, there has been no further discussion with the RSPB around this issue. As this modelling is fundamental to the whole assessment, it is impossible to reach any conclusions with regard to significance of impacts on birds without reassurance that it has been done correctly. As such all the conclusions on AEOI given above can only be considered tentative.

4.9. Digital Aerial Surveys are commonly used to provide the baseline characterisation of a site. These surveys typically cover 10% of the site and the density of birds in the remaining area is extrapolated using either a design- or a model-based approach. The Applicant's survey analysis used 10% coverage and used both a design- and model-based approach. The design-based approach is a relatively simple proportional extrapolation, assuming the density of birds in the area surveyed will be the same as the density of birds in the whole area of interest. The model-based approach uses the MRSea statistical package.

4.10. MRSea was developed to examine animal survey data for signs of changes in animal abundance and distribution following marine renewables development. However, the

[45] Mackenzie, M.L., Scott-Hayward, L.A.S., Paxton, C.G. and M.L. Burt (2017). Quantifying the Power to Detect Change: methodological development and implementation using the R package MRSeaPower.

methods are suitable for a wide range of applications, including extrapolation of bird density from aerial survey. To do so, it incorporates environmental covariates to the survey data to predict densities of species of interest across the whole area of interest. For the assessment, the Applicant has used depth of water and distance to nearest SPA as these covariates. The approach requires adequate samples sizes of each species and so was only carried out for fulmar, gannet, kittiwake, great black-backed gull, guillemot, razorbill and puffin. The RSPB is content that this is a robust method if used correctly and transparently.

4.11. However, there are a number of concerns with how the Applicant has applied the above methods and a lack of clarity as to how data has been treated or consideration of model performance. Natural England also have a number of related concerns and have detailed them in their Relevant Reps (points 63-69, Appendix B, RR-029). These include:

- There is no justification of why model based approach has been used. Such justification should include a comparison with the outputs of a design based approach
- There is insufficient detail in the methodology as to model validation
- It is unclear how population and density estimates were derived (seemingly using different approaches) from the modelled surfaces.
- There is insufficient detail as to how populations and densities were apportioned to different behaviours
- It is unclear how Confidence interval and Co-efficients of Variance (SD/mean or SE/mean) were estimated using model-based approaches for total populations, densities, apportioned behaviours and corrected apportioned behaviours.

4.12. Despite the RSPB inclusion in the Expert Topic Groups, since the submission of the Application documents and relevant reps there has been no update on the baseline bird density modelling. In REP1-065 (Examination Deliverables Summary), the only document pertaining to this seems to be the "MRSea Baseline Sensitivity Report – Gannet" to be submitted for Deadline 2. Since this modelling is fundamental to the whole assessment (not only for gannet), it is impossible to reach any conclusions with regard to significance of impacts without reassurance that it has been done correctly. As such **it is impossible to come to conclusions as to the significance or otherwise of the impacts arising from the development** and all the conclusions on AEOI given above can only be considered tentative.

Definition of Seasons

4.13. The RSPB has outstanding issues with the manner in which the bio-seasons definitions from Furness (2015)[46] have been defined for gannet and kittiwake, effectively excluding the early and later months of the season. This is caused by using the "migration-free" seasonal definition as opposed to full breeding season. For example, the kittiwake breeding season is defined as May to July, when evidence from colony monitoring shows birds are present April at least to August. While in the latter part of the season all birds will have fledged, individual

[46] Furness, R.W. (2015) Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164

birds will still be present with both young and adult birds coming back to the cliff. These are still SPA birds, and those most likely to be affected by impacts from the development.

Collision risk

4.14. In order to assess the mortality that could arise from avian collision with turbine blades, the Applicant has used the stochastic version of the Band Collision Risk Model (sCRM)[47,48]. This approach is welcomed by the RSPB. This method combines a series of parameters describing the turbine design and operation with estimates of a birds' size and behaviour to generate a predicted number of birds that would collide with a turbine over a given time period. The stochastic formulation was initially developed by Masden (2015)[49] and then produced in an easier to use interface by McGregor *et al,* (2018). The stochastic version allows for some account of uncertainty and variability in parameters to be made. However, the Applicant has used the model in such a manner that only deterministic outputs are provided, in other words, while this formulation allows for uncertainty and variability to be accounted for, the Applicant has not made use of this functionality, and therefore has not given a full account of uncertainty and variability. An explanation is required as to why they have taken this approach.

4.15. The input parameters related to bird size and behaviour include a parameter known as "Avoidance Rate". This is defined by Band (2012)[50] as the inverse of the ratio of the number of actual collisions to number of predicted collisions. As such "Avoidance Rate" is a misnomer; it is a catch all term for the inconsistency between predicted and actual mortalities, an inconsistency that can be derived from a variety of sources, including avoidance behaviour *per se*, survey error and model misparameterisation.

4.16. The Applicant has used Avoidance Rates (see above) in the sCRM, as recommended by the Statutory Nature Conservation Bodies (SNCBs 2014[51]) including Natural England. Whilst the RSPB agree with the majority of the advised rates including the use of a 98.9% avoidance rate for non-breeding gannets, in our opinion, a 98% avoidance rate is more appropriate for breeding gannets. This is because the figures used for the calculation of avoidance rates advocated by the SNCBs are largely derived from the non-breeding season for gannet[52,53]. During the breeding season, gannets are constrained to act as central placed foragers meaning they return to the colony after feeding in order to maintain territories, incubate

[47] Band, B. 2012. Using a Collision Risk Model to Assess Bird Collision Risks for Offshore Wind Farms. Report by British Trust for Ornithology (BTO). Report for The Crown Estate.
[48] McGregor, R.M., King, S., Donovan, C.R., Caneco, B. and Webb, A. (2018) A Stochastic Collision Risk Model for Seabirds in Flight. Report to Marine Scotland Science
[49] Masden, E. (2015). Scottish Marine and Freshwater Science Vol 6 No 14: Developing an avian collision risk model to incorporate variability and uncertainty. Published by Marine Scotland Science. DOI: 10.7489/1659-1. http://www.scotland.gov.uk/Resource/0048/00486433.pdf
[50] Band, B. 2012. Using a Collision Risk Model to Assess Bird Collision Risks for Offshore Wind Farms. Report by British Trust for Ornithology (BTO). Report for The Crown Estate.
[51] SNCBs. 2014. Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review. https://www.nature.scot/sites/default/files/2018-02/SNCB%20Position%20Note%20on%20avoidance%20rates%20for%20use%20in%20collision%20risk%20modelling.pdf
[52] Cook, A S C P, Humphreys, E. M., Masden, E. A., & Burton, N. H. K. 2014. The Avoidance Rates of Collision Between Birds and Offshore Turbines. Edinburgh.
[53] Cook, A.S.C.P., Humphreys, E.M., Bennet, F., Masden, E.A., Burton, N.H.K. 2018 Quantifying avian avoidance of offshore wind turbines: Current evidence and key knowledge gaps. Marine Environmental Research, 140, 278-288.

eggs and provide for chicks. Once chicks have fledged adult gannets remain at sea and no longer visit the colony. Differences in behaviour between the breeding and non-breeding season are likely to result in changes in avoidance behaviour[54].

4.17. The current evidence of a strong far field avoidance of wind farms by gannets, established from observed behaviour, is almost entirely derived from non-breeding birds [55]. The evidence for far field avoidance during the breeding season is limited with the exception of a study of gannets breeding on Helgoland[56]. However, it is unclear from this study what the breeding status of the tracked birds was or how their behaviour differed from what would have been expected pre-construction as two of the three wind farms were already operational during the first year of tracking. Digital aerial surveys pre- and post-construction at Beatrice offshore wind farm in the Moray Firth, Scotland show a decrease in gannet abundance post-construction but the provenance, breeding status or age of the displaced birds, is unclear as is any seasonal change in displacement[57] and the results are only for a single breeding season. Despite this evidence of far field avoidance, recent work in Belgian offshore windfarms has shown that potential habituation to the presence of turbines can result in lower far field avoidance[58] and so an elevated risk of collision.

4.18. There is evidence that the foraging movements and behaviour of gannets will vary in relation to stage of the breeding season in response to changes in the distribution and abundance of prey and changing constraints as they progress from pre-laying to chick-rearing[59]. GPS tracking of gannets breeding on the Bass Rock between 2010 and 2021 has shown variation in the two-dimensional foraging behaviour of birds across the breeding season (prior to chick-rearing and during chick-rearing), between sexes, and between years [60,61,62]. Three-dimensional tracking of gannets during chick-rearing has also revealed that flight height and flight speed both vary according to behaviour, sex and wind

[54] Cook, A.S.C.P., Humphreys, E.M., Bennet, F., Masden, E.A., Burton, N.H.K. 2018 Quantifying avian avoidance of offshore wind turbines: Current evidence and key knowledge gaps. Marine Environmental Research, 140, 278-288.
[55] Dierschke, V., Furness, R. W., Garthe, S. 2016. Seabirds and offshore wind farms in European waters: Avoidance and attraction. Biological Conservation, 202, 59–68.
[56] Peschko, V., Mendel, B., Merker, M., Dierschke, J., Garthe, S. 2021. Northern gannets (Morus bassanus) are strongly affected by operating offshore wind farms during the breeding season. Journal of Environmental Management. 279.
[57] MacArthur Green. 2019. Beatrice Offshore Wind Farm Year 1 Post-construction Ornithological Monitoring Report 2019.
[58] Vanermen, N.; Courtens, W.;.; Van de walle, M.; Verstraete, H.; Stienen, E. 2021. Macro-avoidance of GPS-tagged lesser black-backed gulls and potential habituation of auks and gannets. In Degraer, Brabant, Rumes & Vigin (eds) 2021. *Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea, avoidance and habitat use at various spatial scales.* Brussels: Royal Belgian Institute of Natural Sciences, OD Natural Environment, Marine Ecology and Management
[59] Lane, J.V., Jeavons, R., Deakin, Z., Sherley, R.B., Pollock, C.J., Wanless, R.J., Hamer, K. C., 2020. Vulnerability of northern gannets to offshore wind farms; seasonal and sex specific collision risk and demographic consequences. Marine Environmental Research. 162.
[60] Cleasby, I.R., Wakefield, E.D., Bodey, T.W., Davies, R.D., Patrick, S.C., Newton, J., Votier, S.C., Bearhop, S., Hamer, K.C. 2015a. Sexual segregation in a wide-ranging marine predator is a consequence of habitat selection. Marine Ecology Progress Series, 518, 1-12.
[61] Lane, J.V., Jeavons, R., Deakin, Z., Sherley, R.B., Pollock, C.J., Wanless, R.J., Hamer, K. C., 2020. Vulnerability of northern gannets to offshore wind farms; seasonal and sex specific collision risk and demographic consequences. Marine Environmental Research. 162.
[62] Lane, J.V. and Hamer, K.C. 2021. Annual adult survival and foraging of gannets at Bass Rock, Scotland: Report to the Ornithology subgroup of the Forth and Tay Regional Advisory Group (FTRAG-O) – October 2021

conditions[63,64,65] and similar patterns have been recorded in other seabirds[66]. Because any error in the use of flight height and flight speed as input parameters in the sCRM should be corrected for in the use of the Avoidance Rate, any seasonal variation in these parameters should also be reflected in variation in the Avoidance Rate, in the absence of any actual evidence from the breeding season.

4.19. For these reasons the Avoidance Rate used by the Applicant for gannet in the breeding season is likely to be too high, resulting in an underestimate of collision mortality.

Displacement and Barrier Effects

4.20. Displacement arises when there is a significant reduction in the density of birds within the wind farm footprint and the surrounding area (the buffer zones), which may be partial or total displacement, compared with the baseline situation. Displacement is equivalent to habitat loss and may be temporary or permanent, depending on whether or not there is habituation, i.e. adjustment to the presence of the wind farm and a resumption of use of the area. It may be triggered during construction, or during operation, depending on the direct cause. The Joint SNCB Interim Advice Note (2017, updated 2022[67]) defines displacement as affecting birds present *both in the air and on the water*.

4.21. Barrier effects arise when an obstacle, such as a wind farm, causes birds to divert from their intended path in order to reach their original destination. It is generally considered to act mainly on birds in flight (SNCBs 2022). As such they are similar, though not the same, as displacement effects. However, in practical terms it is currently not possible to disentangle the two and so barrier and displacement effects are considered together in impact assessment, as per SNCB advice (*Ibid.*) This assessment must be made on all the birds present on site, regardless of whether in flight or on the water.

4.22. In their assessment of displacement, the Applicant appears to have only used birds on the water, rather than including those flight. The legend to Table 2 in Volume A5 Annex 5.2 Offshore Ornithology Displacement Analysis (page 12, APP-075) clearly states: *"Bio-season mean peak abundance and density estimates of key bird species for Hornsea Four disturbance and displacement assessment (**sitting birds**)"* and 1.6.1.3 makes clear *"for guillemot, razorbill and puffin only sitting birds were included, given the species foraging behaviours".* As such the assessment differs from standard methodology and is contrary to statutory advice. Without the full numbers of birds on the water and in flight put into the

[63] Cleasby, I.R., Wakefield, E.D., Bearhop, S., Bodey, T.W., Votier, S.C., Hamer, K.C., 2015b. Three-dimensional tracking of a wide-ranging marine predator: flight heights and vulnerability to offshore wind farms. Journal of Applied Ecology, 52, 1474–1482

[64] Lane, J.V., Spracklen, D.V., Hamer, K.C., 2019. Effects of windscape on three-dimensional foraging behaviour in a wide-ranging marine predator, the northern gannet. Marine Ecology Progress Series, 628, 183–193.

[65] Lane, J.V., Jeavons, R., Deakin, Z., Sherley, R.B., Pollock, C.J., Wanless, R.J., Hamer, K. C., 2020. Vulnerability of northern gannets to offshore wind farms; seasonal and sex specific collision risk and demographic consequences. Marine Environmental Research. 162.

[66] Masden, E.A., Cook, A.S.C.P., McCluskie, A., Bouten, W., Burton, N.H.K, Thaxter, C. 2021. When speed matters: the importance of flight speed in an avian collision risk model. Environmental Impact Assessment Review, 90.

[67] Statutory Nature Conservation Bodies (Natural Resources Wales (NRW), Department of Agriculture, Environment and Rural Affairs / Northern Ireland Environment Agency (DAERA/NIEA), Natural England (NE), Scottish Natural Heritage (SNH) and Joint Nature Conservation Committee (JNCC)) (2022) Joint SNCB1 Interim Displacement Advice Note.

matrix, **it is impossible to reach conclusions on the significance or otherwise of impacts arising from displacement and barrier effects**.

4.23. Furthermore, in calculating displacement for guillemot, the Applicant has used weighted mean, rather than mean peak density of abundance during the non-breeding season. The Applicant claims this was agreed following consultation at the Evidence Plan meeting on 4th March 2021. The RSPB were unable to attend this meeting, but no detail is given in Table 5.4. "Consultation Responses" in Volume A2 Chapter 5 Offshore and Intertidal Ornithology (page 20, APP-017) of such an agreement and the statement is contrary to Natural England's Relevant Representations (RR-029), which state:

"Natural England do not agree with the Applicant's approach to weighting the seasonal mean peak abundance estimate in the non-breeding season for guillemot."

While the RSPB agree that the high numbers of auks recorded in August and September may require a modified approach, the weighted mean approach is not suitably precautionary and is likely to underestimate the total number of impacted birds.

Apportioning

4.24. The RSPB has outstanding issues with the manner in which apportioning of predicted mortalities to relevant SPAs has been carried out. As a basis for apportioning adults, the Applicant has used theoretical generalised stable age structure derived from population models. The RSPB would prefer that these are presented alongside site specific data on the age of birds recorded during survey. The Applicant has acknowledged the importance of these data in section 3.4.9 of Volume A5 Annex 5.1 Offshore and Intertidal Ornithology Baseline Characterisation Report (page 21, APP-074) as follows:

"consideration of whether any potential impact(s) might occur to an adult bird that is part of the breeding population of a specific colony or designated site (an SPA) or if it might occur to an immature bird that is not associated with the breeding population of a particular colony or SPA".

The Applicant then goes on to highlight that "a detailed breakdown of seabird age classification" is presented. It is therefore not clear why this detailed breakdown has not been used in the assessment.

Population Viability Analysis

4.25. Despite advice from both Natural England and the RSPB the Applicant has only presented a single output metric of Population Viability Analysis (PVA), the Counterfactual of Population Growth Rate (CPGR) and omitted the Counterfactual of Population Size (CPS) with inadequate justification. That the two metrics are best presented in combination was a specific recommendation of a review of output metrics, following work by the RSPB[68] commissioned by Joint Nature Conservation Committee (JNCC) and carried out by the British

[68] Green, R. E., Langston, R. W., McCluskie, A., Sutherland, R., & Wilson, J. D. 2016. Lack of sound science in assessing wind farm impacts on seabirds. *Journal of Applied Ecology*, *53*(6), 1635-1641.

Trust for Ornithology (BTO)[69]. That review recommended the ratio of growth rates are presented to quantify the consequence of impacts at a population level and the ratio of population sizes to present these impacts in an easily understandable context. A further review was commissioned by Marine Scotland Science and carried out by the Centre for Ecology and Hydrology, and the conclusions as to utility of output metrics was similar[70].

4.26. The ease of understanding of the CPS is crucial to its utility; the numbers given by the CPGR are less understandable outwith a population modelling context. To use the theoretical example quoted by the BTO, a CPS of 0.515 means the population size of a Breeding Colony is expected to be 51.5% (i.e. half) of what it would have been in the absence of the development after 25 years, which is easy to understand. Whereas the corresponding CPGR, 0.973, means that the annual population growth rate at the breeding colony declines from 0.994 to 0.967. The actual scale of the consequence of this is hard for a non-specialist to comprehend, that of the CPS is not.

4.27. As such, it is wrong to disassociate the two metrics; aside from the question of comprehension, they are very similar, the only key difference is that CPGR does not include the length of time that the wind farm will be operational. This is crucial as there is considerable uncertainty surrounding most of the aspects of an assessment of the potential impacts of an offshore wind farm. However, the length of time that the development is operational is one of the few aspects not subject to this uncertainty as it is legally fixed. It is also a crucial consideration into the scale of impact. Therefore, the effect of using CPGR in isolation is to remove important contextual information, operational time, complicating the interpretation of impact, thereby increasing uncertainty and the need for precaution.

4.28. Furthermore, the RSPB has run one of the PVA scenarios for gannet and found inconsistencies in the model output reported by the Applicant (Table 3). Using the same Natural England PVA tool and following the PVA parameter log for Hornsea Four alone in the B2.2 Report to Inform Appropriate Assessment Part 11: Appendix H: Offshore Ornithology Flamborough and Filey Coast (FFC) Special Protection Area (SPA) Population Viability Analysis (Appendix C, Seabird PVA Tool Input Log; Hornsea Four alone gannet FFC SPA PVA log, page 53, APP-177) inconsistencies were found in both CPGR and the Reduction in Growth Rate. These inconsistencies are indicative of the impacts not having been adequately assessed by the applicant, either through such errors in the modelling process or by mispresenting the output metrics.

[69] Cook A.S.C.P., and Robinson R.A. (2016) Testing sensitivity of metrics of seabird population response to offshore wind farm effects. JNCC report no. 553

[70] Jitlal, M., Burthe, S., Freeman, S., Daunt, F. 2017. Testing and Validating Metrics of Change Produced by Population Viability Analysis (PVA). Scottish Marine and Freshwater Science Vol 8 No 23.

Table 3: Gannet PVA results for Hornsea Four alone comparing the Counterfactual of Growth Rate and Reduction in Growth Rate provided by the Applicant and as calculated by the RSPB. Discrepancies highlighted in red

	Scenario	Applicant CPGR	Applicant Reduction in Growth rate (p.a)	RSPB CPGR	RSPB Reduction in Growth rate (p.a)
Applicant preferred scenarios	1	1.000	0.01	1.000	0.01
	2	1.000	0.02	1.000	0.01
	3	1.000	0.04	1.000	0.01
	4	0.999	0.08	1.000	0.02
	5	1.000	0.02	1.000	0.03
	6	0.999	0.05	0.999	0.07
	7	0.999	0.06	1.000	0.01
NE preferred	8	1.000	0.02	0.999	0.05
	9	1.000	0.02	0.999	0.10
	10	0.999	0.06	1.000	0.02

4.29. Despite the lack of correct output metrics being highlighted by both Natural England and RSPB there has been no engagement with the RSPB since the submission of Application Documents, no new documentation submitted at Deadline 1 and there appears to be no plans to do so set out in REP1-065 (Examination Deliverables Summary) i.e. it is not apparent it will be submitted to subsequent deadlines. Due to the inadequate manner in which the results of the PVA have been presented, without including the correct model output parameters, it is impossible to reach conclusions as to the significance of impacts on the Flamborough and Filey Coast SPA.

Summary

4.30. As set out at the start of this section a key issue that underpins the whole of the Applicant's ornithology assessment is the manner in which the spatial modelling of survey data has been carried out to obtain baseline information including bird densities to input into predictive modelling of potential bird collision and displacement impact mortalities. The RSPB is content that the proposed method to calculate baselines is robust if used correctly and transparently. However, there are a number of concerns that we share with Natural England around how the Applicant has applied the methods and a lack of clarity as to how data has been treated and how the model based approach has been validated.

4.31. This fundamental issues with the assessment, along with the presentation of the outputs of the modelling of population scale impacts, in our view mean the assessment is inadequate,

and therefore insufficient for the robust consideration required to enable a proper understanding of the likely impacts of the scheme. Whilst we appreciate the Applicant may provide more information (and we reserve the right to review our comments and concerns in light of it) unless the Applicant resolves these two fundamental issues, in our view the assessment currently before the Examination is not fit for purpose.

5. Derogation case: the RSPB's approach to evaluating compensation measures under the Conservation of Habitats and Species Regulations 2017 (as amended)

Introduction

5.1. In short - it is vital that details and evidence are provided to enable confidence ecologically, financially and legally, in the compensation proposals and such information must be available for review by all Interested parties. This section sets out the RSPB's approach to evaluating compensation measures. It includes our general approach to assessing compensation proposals and the level of detail we consider is required in order to evaluate compensation proposals as part of the Examination process, before drawing out some general issues raised by the Applicant's proposals. We have set it out under the following headings:

- The RSPB's approach to assessing compensation proposals;
- What level of detail is required on proposed compensation measures?
- Generic issues raised by the Applicant's compensation proposals:
    - Lack of specific proposals and locations for compensation measures
    - Scale of compensation
    - Lead-in times for compensation
    - Lifetime of compensation in relation to damage
    - Environmental assessment of the proposed compensation measures.

5.2. Section 6 following sets out the RSPB's detailed comments on the Applicant's specific compensation proposals.

The RSPB's approach to assessing compensation proposals

5.3. The RSPB has reviewed both the EC[71] and Defra[72] guidance on compensatory measures. Both are in broad alignment as to the principles to adopt when considering compensatory measures. This review also draws on the RSPB's over 20 years experience evaluating and negotiating compensation proposals under the Habitats Regulations by developers across various sectors. As the EC Guidance is fuller, we have used that as our primary reference, while drawing out any additional points made in the Defra guidance since it is UK focused.

5.4. We have specifically not referred to the consultation draft document from Defra entitled "Best practice guidance for developing compensation measures in relation to Marine Protected Areas" published in July 2021 due to it still being a draft produced for consultation and yet to be finalised.

5.5. In Table 4, we summarise the EC's criteria for designing compensatory measures and annotate them with additional commentary based on the RSPB's experience of the

[71] [redacted] – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (21/11/18) C(2018) 7621 final. Due to the further details this EU guidance provides, we believe it is important to also consider along with the Defra guidance

[72] Defra (2021) https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site. Accessed March 2022.

principles that should be applied when assessing compensatory measures. We will use the combination of the EC guidance and the RSPB's experience in this field to assess compensatory measures put forward by scheme proponents.

Table 4: Criteria for designing compensatory measures

EC criteria	EC guidance summary (emphasis added)	RSPB additional commentary
Targeted	Measures should be the **most appropriate to the impact predicted** and **focused on objectives and targets addressing the Natura 2000 elements affected**. Must **refer to structural and functional aspects of site integrity and habitats/species affected**. **Must consist of ecological measures**: payments to individuals/funds are not appropriate.	Clear objectives and success criteria must be established for the compensation measures. Must address the ecological functions and processes required by impacted species/habitat. Requires shared understanding and agreement on what the impacts are i.e. need to agree nature, magnitude including that they will continue for as long as the project's impacts. This includes the time likely to be required for the SAC/SPA to recover from those impacts in the case of proposals that are in place for a specified time period. This is in order to define objectives for compensation measures and to set out the success criteria to determine whether those objectives have been/are being achieved.
Effective	**Based on best scientific knowledge available alongside specific investigations for the location where the measures will be implemented**. Must be **feasible and operational in reinstating the conditions needed to ensure the overall coherence** of the Natura 2000 network. **Measures where no reasonable guarantee of success should not be considered**. The likely success of the compensation scheme should influence final approval of the plan or project in line with the prevention principle. The **most effective option, with the greatest chance of success, must be chosen**. **Detailed monitoring required** to ensure long-term effectiveness with remediation provisions if shown to be less effective.	Scientific evaluation of proposed measures must be carried out before consent is granted to avoid agreeing to measures that is/are not effective or technically feasible. This should include appropriate baseline survey and assessment. Compensation must address the impacted SPA/SAC (or Ramsar site) feature to ensure overall coherence of the network for that feature is maintained. Substitution is not acceptable. Must be clearly defined timescales for delivery and measuring success (See success criteria under Targeted above). Monitoring must directly relate to the target species or habitat and the relevant ecological functions and processes. The compensation measures should be provided in perpetuity in line with

EC criteria	EC guidance summary (emphasis added)	RSPB additional commentary
		obligations to ensure the overall coherence of the National Site Network is maintained. Where it is not possible to devise compensatory measures to offset the adverse effects on site integrity, the project should not proceed.
Technical feasibility	**Design must follow scientific criteria and evaluation** in line with best scientific knowledge and take into account the specific requirements of the ecological features to be reinstated.	See **Effective** above.
Extent	Extent required **directly related to**: - the **quantitative and qualitative aspects inherent to the elements of integrity likely to be impaired** - **estimated effectiveness of the measure(s)** Therefore, ratios best set on a case-by-case basis. Ratios should generally be well above 1:1. Ratios of 1:1 or below only considered when shown measures will be fully effective in reinstating structure and functionality in a short period of time.	Based on an assessment of the necessary ecological requirements to restore species' populations and the related habitat structure and functions identified in the compensation objectives. Determining the minimum appropriate quantity will require an understanding of the quality of the compensation measures and how effective they will be in reinstating the required structures and functions. Any identified uncertainty in success should be factored in to increased ratios. Ratios need to be used where they make ecological sense and will help secure a successful outcome by providing more of something. Simply multiplying capacity to address uncertainty risks giving a false level of confidence. If there is no reasonable guarantee of success that measure should not be considered (see **Effective** under EC criteria).
Location	**Located in areas where they will be most effective** in maintaining overall coherence of the Natura 2000 network. Pre-conditions to be met include: - **must be within same range/ migration route/wintering areas for bird species** and **provide functions comparable those justifying selection of original site esp. geographical distribution**; - **must have/be able to develop the ecological structure and functions required by the relevant species** (or habitat)	While the preference is for compensation measures as geographically close to the location of the damage, it is important to consider whether or not the compensation measures will be subject to pressures impacting their efficacy in that location e.g. prey availability, disturbance, and/or other impacts from the same or similar developments such as collision risk or displacement due to offshore wind farms. Therefore, compensation measures should be located so as to maximise

EC criteria	EC guidance summary (emphasis added)	RSPB additional commentary
	- **must not jeopardise integrity of any other Natura 2000 site**. Spatial search hierarchy starting as close as possible to the impacted Natura 2000 site and working out from there.	proximity while minimising external pressures that may reduce likelihood of success. Compensation measures proposed to benefit one SPA/SAC/Ramsar site feature must not result in damage to the integrity of any other SPA/SAC/Ramsar site and their features.
Timing	Case by case approach but **must provide continuity in the ecological processes essential to maintain the structure and functions that contribute to the Natura 2000 network coherence**. Requires **tight co-ordination between implementation of the plan or project and the compensation measures**. Factors to consider include: - **no irreversible damage to the site before compensation in place** - **compensation operational at the time damage occurs**. If not possible, over-compensation required - **time lags only admissible if will not compromise objective of "no net loss" to coherence of Natura 2000 network**; - May be possible to scale down in time depending on whether the negative effects are expected to arise in short, medium or long term. **All technical, legal or financial provisions must be completed before plan or project implementation starts** to prevent unforeseen delays that compromise effective compensation measures.	Compensation measures should be fully functional before any damage occurs to ensure the overall coherence of the National Site Network is protected. This requires careful alignment of the timelines for implementing the plan or project and the compensation measures. Suggested time lags in delivering fully functional compensation will need to be carefully considered and can only be accepted where this will not compromise the continuity of essential ecological processes, Any effect of delay should be factored into the design and additional compensation measures provided (see also **Extent** above).
Long-term implementation	**Legal and financial security required for long-term implementation** and **for protection, monitoring and maintenance of sites to be secured before impacts occur.**	Legal rights to secure and implement the compensation measures must be in place prior to consent being granted. And robust financial guarantees are required to fund implementation, monitoring and any necessary remediation measures. In line with Government policy, the Government should commit to including compensation measures, once delivered, within the National Site Network.

5.6. The current Defra guidance (aimed at competent authorities) reinforces some of the points above:

- Must be confident the measures will fully compensate for negative effects
- The measure is technically feasible based on scientific evidence and previous examples
- Whether the compensation measure is financially feasible
- Compensation should be no more than is needed (to protect the coherence of the National Site Network)
- How the compensation will be carried out, including how it will be managed and monitored over time, and how it has been secured
- How long the compensation measure will take to reach the required quality
- Should make sure the compensation measures will remain in place all the time they are needed
- Must put in place all necessary legal, technical, financial and monitoring arrangements
- Compensation measures should usually be in place and effective before the negative effect is allowed to occur.

5.7. Overall, this can be expressed in another way to help identify ecologically effective compensation and the options to deliver it:

- **Understanding and defining what is ecologically effective compensation for a given feature** i.e. what is needed to address the ecological functions affected by the predicted impact(s) e.g. improvements in breeding productivity of an impacted seabird species;
- **Identifying the potential options** to provide ecologically effective compensation in principle and agreeing the scale of compensation required to protect the overall coherence of the National Site Network for the impacted feature taking account of the management objectives for that Network. This should consider factors affecting the likely success of the compensation measure in order to identify appropriate search criteria. In the case of seabirds, this might include avoiding proximity to current and planned offshore wind farms while ensuring access to areas with good food supply etc;
- **Applying a hierarchical search for suitable locations** to carry out those options to determine where they might be feasible. This should follow the following spatial hierarchy based on where the benefit of the compensation will accrue:
    - Provides benefit to the impacted SPA/SAC where that is appropriate given the risk factors considered above. Note: this is not the same as being located inside the MPA, which in UK MPA terms is unlikely to be feasible given the constrained boundaries usually applied i.e. all areas within the boundary are integral to its functioning already;
    - Provides benefit to a different SPA/SAC for the impacted feature;

- A "de nouveau" site that provides benefit to the feature itself and can be added into the relevant site network once it has met its compensation objectives.

- **Detailed assessment of the feasibility of successfully delivering the chosen option** in the selected location(s). It is important to separate out the type of measure (and its ecological effectiveness as compensation) and the likelihood of it succeeding in practice at a particular location to meet the required compensation objectives. Certainty of success of a specific measure per se is not the same as whether it will be ecologically effective as compensation. However, it needs to be deemed potentially ecologically effective as compensation first before detailed options are drawn up and assessed. If it is not potentially ecologically effective as compensation, then it should not be considered further (in line with existing Defra guidance).

Additionality

5.8. The EC guidance (section 5.4.1) makes the general, overarching point that:

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

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

- Measures necessary to site management of the affected SPA or SAC e.g. to restore a designated feature to favourable status;
- Measures designed to meet other obligations e.g. achievement of Good Environmental Status (GES) under the Marine Strategy Regulations 2010.[73]

What level of detail is required on proposed compensation measures?

5.10. In his decision[74] on the Hornsea Project Three scheme, the Secretary of State for Business, Energy and Industrial Strategy set out clear expectations that offshore wind (and other) developers should submit (what have been termed by other developers) "in principle" compensation measure packages as part of their application, following appropriate pre-application discussions with stakeholders (emphasis added):

"6.3 The Secretary of State is clear that the development consent process for nationally significant infrastructure projects is not designed for consultation on complex issues, such as HRA, to take place after the conclusion of the examination. On occasion, as a pragmatic response to particular circumstances, he may undertake such consultation, but no reliance should be placed on the fact that he will always do so. In this instance, he has, on balance, accepted that the situation in respect of potential significant adverse effects on the sites referred to in para 6.2 was novel and so has exercised his discretion, and allowed the Applicant to make further representations on the matter of possible compensatory measures

[73] Marine Strategy Regulations 2010. No. 1627. http://www.legislation.gov.uk/uksi/2010/1627/contents/made Accessed 29 March 2022

[74] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-003265-EN010080%20Hornsea%20Three%20-%20Secretary%20of%20State%20Decision%20Letter.pdf Accessed 29 March 2022

for those sites. However, he wishes to make it clear that, in order to maintain the efficient functioning of the development consenting regime, he may not always request post-examination representations on such matters, indeed it should be assumed that he will not do so, and he may therefore make decisions on such evidence as is in front of him following his receipt of the ExA's report. ***It is therefore important that potential adverse impacts on the integrity of designated sites are identified during the pre-application period and full consideration is given to the need for derogation of the Habitats Regulations during the examination****. He expects Applicants and statutory nature conservation bodies ("SNCBs") to engage constructively during the pre-application period and* ***provide all necessary evidence on these matters, including possible compensatory measures, for consideration during the examination****.*

6.4 This does not mean that it is necessary for Applicants to agree with SNCBs if SNCBs consider that there would be significant adverse impacts on designated sites. The final decision on such matters remains for the Secretary of State (though the Secretary of State reserves the right not to request further evidence from Applicants following the examination). Applicants should be assured that where they disagree with SNCBs and maintain a position that there are no significant adverse impacts, but provide evidence of possible compensatory measures for consideration at the examination on a "without prejudice" basis, both the ExA in the examination and the Secretary of State in the decision period will give full and proper consideration to the question of whether there are or are not significant adverse impacts. It will not be assumed that the provision of information regarding possible compensatory measures signifies agreement as to the existence of significant adverse impacts. The ExA will be required to provide an opinion on the sufficiency of the proposed compensation even if it considers that compensation is not required (in case the Secretary of State disagrees with that conclusion), but such measures would only be required if the Secretary of State were to find that there would be significant adverse impacts (and that the proposed compensatory measures are appropriate)."

5.11. We note statements to similar effect were made in the Secretary of State's decisions on the Norfolk Boreas and Norfolk Vanguard decisions (and referred to in the Examining Authority's First Written Questions at ES.1.23).

5.12. In this context, the RSPB does not consider "in principle" equates to "outline" proposals such that all/most of the critical issues are deferred in order to be addressed post-DCO consent. We consider this would completely undermine confidence in what the compensation measures will comprise and that the public interest to protect the coherence of the National Site Network can be secured.

5.13. Based on its review of various offshore wind farm compensation proposals over the last 18-24 months, the RSPB considers that much greater detail about the location, design and implementation, monitoring and review of any proposed compensatory measures is needed to inform the application and examination process and enable proper public scrutiny. Details of the associated agreements, consents and permissions required to deliver the compensation measures should also be available for scrutiny. This in turn should provide the Secretary of State with the necessary confidence as to whether those measures can be

secured and implemented with a reasonable guarantee of success, thereby protecting the coherence of the National Site Network.

5.14. We consider there are detailed requirements that should be subject to public scrutiny during the Examination process and settled before its conclusion, thereby enabling the final DCO to include all necessary conditions and requirements and any lack of confidence that compensation measures have/can be secured and/or will have a reasonable guarantee of success highlighted, so that the Examiners can take account of these concerns. Therefore, details of the proposals should be available as part of the application documentation in order that any potential interested parties have a full opportunity to review and assess their adequacy at an early stage of the Examination; thus ensuring that should further information and consideration be required this is possible within the Examination timetable, minimising further submissions and possibly ISHs having to be squeezed in.

5.15. The following are key details, with some adaptation, common to all compensation measures that, we believe, should be included within proposals preferably with the application documents or at least at the very early stages of the Examination. Once these have been completed and relevant processes completed, be satisfied that the relevant legal consents are secured before any decision on DCO consent, assuming consent for the compensation measure is granted by the relevant decision-making authority. If consent has not been granted, the Examining Authority and Secretary of State would know in advance.

- **Nature/magnitude of compensation**: sufficient detail to enable review of :
    - the scale of compensation required in relation to the predicted impacts;
    - the detailed compensation proposals including objectives and associated success criteria to address those impacts;
    - Identify the relevant consenting and/or licensing mechanisms required; Identify any potential impacts of the proposed measure on the receptor site(s) and surrounding environment and carry out appropriate screening;
    - Based on this, identify any particular impact assessment requirements necessary which might arise from likely direct and indirect effects of the compensation measure on other receptors (e.g. Environmental Impact Assessment, Habitats Regulations Assessment, SSSI consents etc);
    - best estimate of the timeline by which each proposed compensation measure can be fully implemented and when it will achieve its objectives (including assessment of ecological uncertainty), the latter to work out the lead-in time necessary to implement the compensation measure and ensure the overall coherence of the National Site Network is protected;
- **Location:** identification of precise location of compensation measure and legal securing of proposed compensation sites/measures with ability to scrutinise:
    - compensation design (detail);
    - evidence of relevant consents, licences, agreements etc being secured or at least being able to be legally secured;
    - both relevant processes and legal consents are included within the DCO; and

    - evidence of relevant legal agreements to secure land to ensure compatibility with compensation objectives are possible;
- **Monitoring and review:** detailed monitoring and review packages. As well as the relevant technical detail addressing the objectives for each compensation measure and success criteria, these should include:
    - Detailed terms of reference and ways of working for any "regulators group" to oversee implementation of measures, review periods, feedback loops etc;
    - Commitment to ensure the data and results of monitoring are publicly available to enable lessons to be learned and applied elsewhere, and to demonstrate the level of success and compliance.
- **Compliance and enforcement:** details and evidence of how the proposed compensation measures will be subject to review by the relevant regulator and the legal mechanisms available to those regulators to review and enforce any approved compensation plans e.g. if the agreed success criteria are not met. This is especially important if the proposed measures lie outside the jurisdiction of the decision-making authority.

5.16. At page 31 in Appendix C to its relevant representation (RR-029) Natural England has included Annex A, a checklist it has developed for compensatory measure submissions. We fully support Natural England's advice especially the approach and level of detail considered to be required as part of the application documentation. It flows from the criteria and other factors we have described above and provides a robust basis for the evidence on each proposed compensation measure that should be submitted as part of any application.

5.17. The RSPB considers there are significant, detailed considerations for compensation measures that are essential to consider before consent is granted; rather than assume an outline compensation measure can be translated in to a detailed and workable measure "on the ground" at a later date and all the necessary consents and agreements successfully secured.

5.18. Not only should these details be subject to public scrutiny as part of the Examination process but to enable these issues to be properly addressed by the Examiners and the Secretary of State, such confirmed details are vital for confidence to be placed on the measures proposed.

5.19. This would in turn enable the Examining Authority and Secretary of State to be able to make a fully informed decision on whether proposed compensatory measures have been secured, have a reasonable guarantee of success and therefore will protect the overall coherence of the National Site Network.

5.20. The criteria, guidance and associated requirements set out above will guide how the RSPB assesses the Hornsea Project Four compensation measure proposals.

Generic issues raised by the Applicant's compensation proposals

Lack of specific proposals and locations for compensation measures

5.21. As set out in our relevant representation (RR-033), the RSPB's overarching comment is that the Applicant has failed to put forward detailed and location specific compensation measures for any impacted species. Neither have any been secured. It is therefore not possible at this stage for the RSPB to assess any of the compensation measures properly and provide advice to the Examining Authority on whether each has a reasonable guarantee of success in meeting specific, agreed compensation objectives.

5.22. However, we have, as far as is practicable, provided more detailed comments in section 6 on each of the broad compensation measures.

Scale of compensation

5.23. The RSPB agrees with Natural England (page 10, Appendix C, RR-029) that:

"the scale of compensation required for all [compensation] measures cannot currently be determined…

5.24. We further agree with Natural England that this is due to:

- Concerns with the offshore ornithology baseline characterisation (see section 4 above);
- The need for a quantified assessment of the level of compensation required to meet the predicted impact for each compensation measure, as the scale of the measure required will in part determine whether delivery is feasible.

5.25. We consider the current evidence base for the different compensation measure proposals is insufficient and claimed benefits remain theoretical. This means it is not possible to have confidence in the compensation measures in general terms at this stage, in addition to specific comments set out in section 6 below and Annexes B and C.

Lead-in times for compensation

5.26. As Natural England has noted in its relevant representation (page 10, Appendix C, RR-029) the Applicant proposes minimal lead-in times for its compensation measures: just 1 or 2 years prior to operation. The RSPB does not consider these lead-in times to be acceptable and would not meet the requirement for compensation measures to be functioning prior to damage occurring.

5.27. These short lead-in times do not recognise basic seabird breeding ecology, for example kittiwakes do not breed until they are 4+ years old. Any implementation timetable must ensure that the compensation measure is in place and ecologically functional before the damage occurs. Factors that need to be taken in to account in developing the required timeline include:

- The breeding ecology of the impacts species and timescales likely to be required for the agreed compensation measure to be ecologically effective;

- The point at which the adverse effect is predicted to occur. This will depend on the nature of the impact e.g.:
    - For collision: it would be at the point the wind farm becomes operational;
    - For displacement: it would be at an agreed point relating to when the physical presence of the wind farm infrastructure (operational or not) is deemed to be giving rise to displacement that is impacting on the relevant seabird species' population.
- That it is highly unlikely that the compensation will be delivering at the scale required before the impacts occur or during any period of colony establishment.

Lifetime of compensation in relation to damage

5.28. It is the RSPB's view that compensation measures should remain in place for as long as the project's adverse impacts on the SAC/SPA/Ramsar site continue. Typically, this has been "in perpetuity" as impacts have been permanent. We recognise this is not automatically the case when dealing with offshore wind farms. However, it is also not as simple as just the lifetime of the development as proposed by the Applicant. This is in line with our advice to the Secretary of State regarding the Hornsea Project Three compensation. As noted in paragraph 2.18 of that response (November 2020)[75]:

"The length of time the compensation measures should be secured for must be based on the combination of the lifetime of the development plus the time it will take the affected seabird population to recover from the impacts."

5.29. Therefore, the apparent default proposal that the compensation measure will be decommissioned at around the end of the lifetime of the development is not acceptable. There are two key factors:

- Time lag in a new colony reaching the necessary population size meaning there is likely to be a significant delay before the required population is reached (assuming it is colonised);
- The time taken for the relevant population at the FFC SPA to recover from the accumulated annual losses of breeding adults over 35 years, and once the wind farm has ceased operation. The development's impact on the FFC SPA will likely go substantially beyond the lifetime of the development.

5.30. We welcome the fact that the Secretary of State has followed our advice and that of Natural England on this matter in his decisions on Hornsea Three, Norfolk Boreas and Norfolk Vanguard by requiring that the various compensation measures be maintained beyond the operational lifetime of the development (if they are colonised).

Environmental assessment of the proposed compensation measures

5.31. The RSPB notes that the Applicant has carried out what it proposes to be an environmental assessment of its proposed compensation measures.[76] However, we consider this exercise to

[75] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-003259-RSPB.pdf Accessed 29 March 2022

[76] Document references: APP-057, APP-058. APP-059, APP-061, APP-062, APP-063, APP-064, APP-065 and APP-066

be of very limited (if any) practical value at this stage given the lack of precise information relating to any of the proposed compensation measures in respect of their location, design, implementation and management methodologies and other relevant factors. As a consequence, it is not possible to properly screen, scope and environmentally assess any of the compensation measures at this stage. Therefore, the assessment of likely environmental effects set out in the Environmental Statement (APP-057) and associated documents cannot be relied upon at this stage and no weight should be placed on the information provided.

5.32. As we set out elsewhere in section 5 of this written representation, we would expect detailed information to be provided on each compensation measure as part of the application documentation, such that the claimed benefits and any environmental effects of each measure can be scrutinised during the examination. At this stage, such detail has not been provided by the Applicant. We would welcome clarification from the Applicant on when further detailed information on each specific compensation measure will be provided, including but not limited to location, design, implementation methods and management, monitoring etc.

Summary

5.33. This section sets out the RSPB's approach to evaluating compensation measures. It includes our general approach to assessing compensation proposals and the level of detail we consider is required in order to evaluate compensation proposals as part of the examination process, before drawing out some general issues raised by the Applicant's proposals.

5.34. The RSPB has reviewed both the EC[77] and Defra[78] guidance on compensatory measures. This review also draws on the RSPB's over 20 years experience evaluating and negotiating compensation proposals under the Habitats Regulations by developers across various sectors. As the EC Guidance is fuller, we have used that as our primary reference, while drawing out any additional points made in the Defra guidance since it is UK focused.

5.35. The RSPB will use the EC's criteria and its experience to evaluate the various compensation measures:

- Targeted;
- Effective;
- Technical feasibility;
- Extent;
- Location;
- Timing;
- Long-term implementation;
- Additionality.

[77] EC (2018) Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (21/11/18) C(2018) 7621 final.
[78] Defra (2021) https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site. Accessed March 2022.

5.36. In addition, we have set out the level of detail we consider is required in any proposed compensation measures, and have gone on to identify generic issues raised by the Applicant's proposals:

- Lack of specific proposals and locations for compensation measures;
- Scale of compensation;
- Lead-in times for compensation;
- Lifetime of compensation in relation to damage.

Environmental assessment of the proposed compensation measures

5.37. Section 6 and Annexes B and C set out the RSPB's detailed comments on the Applicant's specific compensation measures as submitted.

5.38. Our key and overarching comment is that the Applicant has failed to put forward detailed and location specific compensation measures for any impacted species. Neither have any been secured. It is therefore not possible at this stage for the RSPB to assess any of the compensation measures properly and provide advice to the Examining Authority on whether each has a reasonable guarantee of success in meeting specific, agreed compensation objectives.

6. RSPB detailed comments on the Applicant's specific compensation proposals

Introduction

6.1. Below we set out the RSPB's views on the following compensation measures put forward by the Applicant:

- Offshore and onshore artificial nesting structures (kittiwake and gannet);
- Bycatch reduction (guillemot, razorbill and gannet);
- Predator eradication (guillemot and razorbill);
- Fish habitat enhancement – seagrass restoration.

6.2. Annex B (bycatch reduction) and Annex C (predator eradication) to this main submission provide more detailed comments, drawing on additional RSPB expertise on these matters. The key points on each are summarised below.

Offshore and onshore artificial nesting structures (kittiwake and gannet)

6.3. The Applicant has proposed the use of artificial nesting structures as compensation measures for both gannet and kittiwake. Below we deal briefly with the proposals for gannet before providing more detailed comments on the proposals for kittiwakes.

Gannets and artificial nesting structures

6.4. The RSPB's view remains as set out in its Relevant Representation (RR-033).

6.5. In respect of gannets and the use of artificial nesting structures as a compensation measure, the RSPB accepts that there are examples where northern gannets have nested or attempted to nest on artificial structures (see pages 43-46, Table 5, and paragraphs 4.2.1.3 – 4.2.1.6 in Volume B2, Annex 7.1 Compensation measures for FFC SPA Offshore Artificial Nesting Ecological Evidence, APP-187) but does not accept that this behaviour, observed in fewer than 20 individual birds out of an estimated population of 1.5-1.8 million birds, can be described as "compelling evidence" (page 43, paragraph 4.2.1.1, APP-187). In fact, we would suggest it demonstrates that the opposite is true and that the species is dependent on natural nesting habitats.

6.6. The Applicant has provided no evidence of a Northern Gannet colony establishing on an artificial structure, the evidence of such behaviour is limited to three case studies of Australasian gannets. Therefore, the RSPB considers the concept of artificial nesting structures is a wholly unproven compensation measure for Northern Gannets.

6.7. This is consistent with the view expressed by Natural England in its relevant representation (page 2, Appendix C, RR-029):

"Natural England considers the provision of an offshore artificial nest structure for gannet to be highly experimental."

6.8. At this time, in the absence of substantive and compelling evidence otherwise, we are not persuaded that artificial nesting structures can be considered even theoretically feasible as a compensation measure for this species.

Kittiwakes and artificial nesting structures

6.9. The Applicant proposes artificial nesting structures as the compensation measure for kittiwakes:

- Offshore (primary compensation measure – new or repurposed);
- Onshore (secondary or alternative if required).

General comments on artificial nesting structures as compensation measures

6.10. As set out in our relevant representation (RR-033), in the RSPB's comments on the August 2021 consultation (see pages 21-23, Volume B1, Annex 1.37 – Non Statutory Targeted Compensation Measures Consultation Responses, APP-166), the RSPB agreed that artificial nesting structures are a possible compensation measure for kittiwake but with such substantial caveats that we consider they are unproven as a compensation measure. That remains the RSPB's position. This is despite the Secretary of State's decisions to accept onshore artificial nesting structures as kittiwake compensation for the Hornsea Three, Norfolk Boreas and Norfolk Vanguard offshore wind farm projects.

6.11. Our general and fundamental concerns (as set out in detailed comments on the Hornsea Project Three proposals) remain in terms of whether artificial nesting structures are capable of providing a reasonable guarantee of success as a compensation measure e.g.:

- Whether the selected location will have access to a good food supply to help secure good productivity over time;
- Whether nesting habitat is a limiting factor for the breeding population of kittiwakes in the southern North Sea; and therefore
- Whether artificial nesting structures will be colonised and whether these will be additional breeding adults, as opposed to existing breeding adults choosing to redistribute themselves;
- Whether and over what timescale any new colony will achieve the target population and recruitment of breeding adults into the Eastern Atlantic biogeographic population and thereby to provide benefit to the kittiwake SPA network, including the FFC SPA;
- Whether the selected location will be exposed to additional pressures e.g. collision risk from current and planned offshore wind farms.

6.12. The RSPB continues to expect a substantial and detailed proposal to be set out, including details on the precise location, design, possible impacts on environmental receptors, as well as monitoring and reporting, plus assessment of risk in terms of available food supply and collision with existing and planned offshore wind farms.

6.13. In order to address these uncertainties, we recommend that a meta-population analysis is carried out to clarify the dynamics between potential purpose-built artificial nest sites and SPA and other colony populations. Due to immigration from other colonies being required

for recruitment into the artificial colonies, conventional population analysis, which are based on closed populations, are not suitable. A method for the theoretical quantification of connectivity between colonies has been described by Miller (2020)[79] and Miller et al (2020)[80] for the Shetland meta-population of kittiwake, and a similar method for a regional meta-population of East Atlantic would elucidate the feasibility of the establishment of the colonies. Furthermore, it would investigate the consequences of such colony establishment on the populations of other colonies, in particular that of the FFC SPA. There is additional complexity due to the number of emerging proposals for artificial nesting structures as compensation from other wind farm developers.

6.14. To date, such detailed information and analysis is lacking in the Applicant's proposals.

Comments on the Applicant's offshore nesting structure proposals

6.15. Below we set out the RSPB's comments on the Applicant's offshore nesting structure proposals for kittiwakes. The RSPB recognises the significant amount of work by the Applicant to explore and identify potential suitable offshore locations for putative kittiwake nesting structures. However, it is also apparent that a significant amount of further work is still required before detailed proposals can be presented to the examination so that they can be fully scrutinised.

Table 5: RSPB review of Hornsea Four offshore nesting structure compensation proposals for kittiwakes

EC criteria/additional consideration	RSPB comments
Targeted	For the reasons outlined above the RSPB considers considerable uncertainties remain as to whether an (offshore) nesting structure is capable of providing a compensatory measure for breeding kittiwakes with a reasonable guarantee of success. We also agree with Natural England (Theoretical merit to deliver compensation, page 2, Appendix C, RR-033) that: "the scale of benefit to the impacted site [FFC SPA] will be indirect and is likely to be unquantifiable." Therefore, the benefit of any such measure is not capable of being explicitly targeted at the FFC SPA nor, on the same logic, the National Site Network of SPAs for kittiwakes.
Effective	Given the ongoing uncertainties in this measure, the RSPB continues to consider the measure must be regarded as experimental at this time.

[79] Miller, J.A.O. (2020*)* Regulation and risk: developing models to assess the dynamism of seabird populations and their risk from anthropogenic mortality. PhD thesis, University of Glasgow

[80] Miller, J., Furness, R., Trinder, M & Matthiopoulos, J. 2020. - Estimating connectivity and vulnerability in a seabird metapopulation, Presentation to MASTS conference, 7th October 2020.

EC criteria/additional consideration	RSPB comments
	In addition, the ongoing concerns with the offshore ornithology baseline characterisation mean it is not yet possible to: • Carry out a quantified assessment of the level of compensation required to meet the predicted impact; and thereby • Set detailed compensation objectives; and from those design • A comprehensive and agreed long-term monitoring plan to assess the effectiveness of any offshore nesting structure proposal. Issues such a monitoring plan should cover include how best to monitor and assess colonisation and breeding success (e.g. productivity) and how to relate this to agreed compensation objectives.
Technical feasibility	The RSPB accepts that construction of an artificial nesting structure per se is likely to be technically feasible. What is not known is whether this would be used by nesting kittiwakes. As noted by Natural England, the logistics in the offshore environment will be challenging, whether it is providing new or repurposing existing structures. Critically, we have not been provided with a precise location and accompanying detailed designs of any such nesting structure to evaluate. Therefore the RSPB is not in a position to determine whether any specific proposal is technically feasible. Consistent with other RSPB comments on the package of compensation measures, the Applicant needs to submit the necessary detail (e.g. precise location, design) to the examination for evaluation before it is possible to confirm whether such a measure is technically feasible in terms of meeting the required compensation objectives (e.g. see Effective and Extent in this table).
Extent	Due to concerns with the baseline characterisation of the impacts of Hornsea Project Four on the Flamborough and Filey Coast SPA (see section 4 above) it is not currently possible to agree impact levels and therefore compensation levels. Further work would then be needed to agree how any detailed compensation objectives should be set. This in turn will influence whether or not any proposed measure is targeted, effective and technically feasible in respect of delivering those objectives. Given the lack of key information, it is not currently possible to advise on this issue.
Location	No specific location has been proposed. Therefore, it is not possible to evaluate the Applicant's proposals at this stage. As set out above, the RSPB recommends that a meta-population analysis is carried out to clarify the dynamics between any proposed

EC criteria/additional consideration	RSPB comments
	purpose-built artificial nest site(s) and SPA and other colony populations. This would help elucidate the feasibility of the establishment of the proposed colonies. Furthermore, it would investigate the consequences of such colony establishment on the populations of other colonies, in particular that of the FFC SPA.
Timing	We refer the Examining Authority to our generic comments in section 5 on both the lead-in times for compensation and the lifetime of compensation measures in relation to damage. Therefore, we do not accept the Applicant's proposals of a nesting structure being in place for a minimum of 2 breeding seasons (new structure) or 1 breeding season (repurposed structure) prior to operation of the wind farm. Like Natural England, we consider these lead-in times are very short, do not recognise basic kittiwake breeding ecology (they do not breed until they are 4+ years old), and fail to acknowledge that it is highly unlikely that the compensation will be delivering at the scale required before the impacts occur or during any period of colony establishment. In this respect, we further agree with Natural England's comments on timing (page 9, Appendix C, RR-033) that implementation before impact is not the same as delivering of the functional compensation before impact (see Table 4 above). Determining what comprises functional compensation is related to agreement on detailed compensation objectives and how success should be measured, which in turn will be related to relevant breeding ecology metrics.
Long-term implementation	**Length of time over which the compensation measure should be in place** We refer the Examining Authority to our generic comments on this issue at paragraphs 5.28-5.30 in section 5 above. For the reasons set out there, we consider it unacceptable to limit the lifetime of the compensation to that of the offshore wind farm itself. Nor is it consistent with the Secretary of State's approach with recent decisions (Hornsea Three, Norfolk Boreas and Norfolk Vanguard). In addition, lack of a specific proposal means that it is not possible to evaluate whether site specific constraints exist that could undermine confidence in long-term implementation.
Additionality	The RSPB agrees with Natural England's concerns in respect of additionality:

EC criteria/additional consideration	RSPB comments
	• As nest availability has not been proven to be a limiting factor there is a high level of uncertainty regarding additionality i.e. whether or not the measure would be compensatory; • If the eventual proposal is to maintain an existing colony, either in situ or on a new structure, then additionality must be carefully considered. We agree with Natural England that maintaining a colony with no productivity increase or relocating existing breeding birds would not deliver compensation. We also agree with Natural England that demonstrating additionality places new and wider requirements on monitoring than just the artificial structure itself. It will require, for example, understanding of existing offshore colonies and their productivity.

Comments on the Applicant's onshore nesting structure proposals

6.16. In our relevant representation (RR-033), the RSPB expressed concerns with onshore nesting structures, given the number of offshore wind farm projects (consented and submitted) already proposing such measures, with a particular preponderance in Suffolk. This raises concerns in the identification and securing of suitable locations capable of addressing the many uncertainties listed in paragraph 6.11 above.

6.17. In this context, the RSPB shares Natural England's additional concern (page 2, Appendix C, RR-029):

"Natural England is not persuaded that further onshore artificial nesting structures are likely to result in sufficient benefits to produce compensation, given the number and location of such structures already proposed by submitted OWF projects. It has not been demonstrated there is a sufficient pool of nest-limited kittiwake recruits, suitable locations and/or prey availability available to meet and sustain the existing demand for this measure. We therefore recommend that this measure should not be taken forward by the Applicant."

Bycatch reduction (guillemot, razorbill and gannet)

6.18. The RSPB's detailed comments on the Applicant's bycatch reduction compensation proposals in respect of guillemot, razorbill and gannet are set out in Annex B to this submission. Below we summarise the RSPB's view on the Applicant's current proposals.

6.19. The RSPB does not accept that bycatch reduction can be described as a compensation measure, primary or otherwise, and considers this proposal is experimental research.

6.20. As a result, we have no confidence that the proposed measures are viable, effective or can be delivered.

6.21. The Applicant is proposing gillnet bycatch reduction measures, yet there are currently no recommended technical measures for gillnet bycatch mitigation. The measures that are

proposed and trialed are unproven and fail to meet the ACAP Best Practice Seabird Bycatch Mitigation Criteria and Definition.

6.22. The results of the research trials will only be available once they finish in 2023 i.e. after the examination ends and the current decision date for the DCO. Until then we cannot have any certainty that they will be effective, and certainly not as compensation measures required to meet targeted objectives to protect the overall coherence of the National Site Network for affected seabird species. Before any measures can be deemed acceptable as bycatch mitigation they must be proven through a robust trial, with all data made available for peer-review. Peer-review will be necessary to tackle important questions about whether the initial trial truly demonstrates efficacy or not, and what else may be required (e.g. further data collection, robust commercial testing). Whilst we welcome the proposals to conduct some (limited) experimental research, as currently described, the proposal is not fit for purpose as a possible compensation measure.

6.23. Bycatch action in the UK is constrained by a lack of data. Although recent studies provide a much needed, broadscale picture of seabird bycatch in the UK, there remains considerable uncertainty around the true nature and scale of bycatch affecting gannets, guillemots and razorbills. As a result, there can be no confidence that bycatch reduction proposals will be of any benefit to these species and therefore provide compensation with a reasonable guarantee of success. Additionally, the Applicant's research (Volume B2, Annex 8.1: Compensation measures for FFC SPA: Bycatch Reduction: Ecological Evidence, APP-194) contains some significant data gaps that prevents assessment of the efficacy of any proposed measures.

6.24. If the proposed bycatch mitigation measures were proven effective per se, based on our considerable experience in this field we are concerned about the achievability of uptake and implementation over a period of more than 35 years. This places a significant burden of proof on the Applicant to demonstrate how such sustained uptake will be achieved. This needs to be confirmed and guaranteed before the end of the examination so that it can scrutinised by the Examining Authority and interested parties.

6.25. We will review any more detailed information provided by the Applicant and await the outcome of the trial research.

Predator eradication (guillemot and razorbill)

6.26. The RSPB's detailed comments on the Applicant's predator eradication (or island restoration (IR)) compensation proposals in respect of guillemot and razorbill are set out in Annex C to this submission. Below we summarise the RSPB's view on the Applicant's current proposals.

6.27. To succeed, IR needs the effective targeting of 100% of the Invasive Non-Native Species (INNS) to achieve eradication, supported by comprehensive measures to keep the risk of reinvasion low and ongoing capacity to respond effectively to any biosecurity breach. Therefore, it requires the feasibility of removing the INNS from each island to be restored to be firmly established, rather than assumed, combined with ongoing commitment among key stakeholders. This is to ensure successful eradication is sustained through implementation of

biosecurity and (48-hour) emergency response plans and securing the resources necessary to implement these measures in perpetuity.

6.28. The level of detailed information and assessment described below is critical to bottom out before deciding whether an IR scheme is feasible to proceed to implementation. In the context of determining whether a compensation measure is feasible and therefore DCO consent should be granted, this is particularly important.

6.29. To have confidence IR will succeed in restoring the seabird species it is intended to benefit requires a good understanding of the vulnerability of the beneficiary seabird species to the INNS to be targeted for removal, and an understanding of the risk of reinvasion by the target INNS (assuming they have been successfully eradicated).

6.30. The RSPB recognises that predator eradication or island restoration (IR) offers some potential to benefit guillemots and razorbills. However, we consider it premature to describe IR as a primary compensation measure for these two auk species.

6.31. IR is a complex and highly specialised conservation measure. The RSPB considers the following elements are essential before a proposal to deploy IR as a compensation measure for specific seabird species can be properly assessed to determine if it will have a "reasonable guarantee of success" in line with Defra and EC guidance on compensation.

6.32. A full-scale Feasibility Study carried out by a suitable eradication expert contractor to international best practice standards in order to firmly establish that the removal of Invasive Non-Native Species (INNS) for each island to be restored is feasible. This must be assessed against the 7 feasibility criteria set out in Table 1 on page 18 of the Manual of the UK Rodent Eradication Best Practice Toolkit (2018).[81] This will include but is not limited to detailed assessments of the selected islands regarding:

- the presence/absence of the beneficiary seabird species and its historic and current population status;
- Habitat suitability survey to determine the extent of unoccupied but suitable habitat available to the beneficiary seabird species;
- Up to date survey to establish the presence of INNS of concern, on both target islands and areas from where they could reinvade;
- A good understanding of the vulnerability of the beneficiary seabird species to the INNS to be targeted for removal on the selected islands and evidence to show how they will benefit from the IR proposal;
- Detailed biosecurity and emergency response plans, based on a proper understanding of the risk of reinvasion by the target INNS and to be funded in perpetuity;
- Evidence that full community support for the IR scheme (eradication, biosecurity and emergency response) has been obtained;
- Evidence that relevant landowner/occupier consents have been obtained;

[81] See: [redacted] Accessed 29 March 2022

- Evidence that relevant legal consents to carry out IR have been obtained where required.

6.33. In summary (and in general terms):

- Razorbills are thought to be more vulnerable than guillemots to predation by black and/or brown rat and risk of local extinction due to the accessibility of their nesting habitat;
- Black rat is likely to be a greater threat than brown rat to either guillemot or razorbill due to its greater agility and potential ability to access their nesting habitat.

6.34. At present, the Applicant has not provided any information on the precise location it intends to carry out any IR scheme. Nor is there a detailed feasibility study and associated implementation and biosecurity plans which can be used to assess whether or not any selected location is both suited to IR and which provides evidence that either guillemot and/or razorbill will benefit.

6.35. Therefore, we agree with Natural England (page 8, Appendix C, RR-029) that is not possible to:

"have certainty that the measure will be deliverable or make any assessment of the scale of the measure that might be achievable."

6.36. At present, the RSPB does not have confidence that the predator eradication measure would benefit either guillemot or razorbill and so provide compensation. To determine whether an IR scheme will, rather than might, benefit either species in a selected location requires detailed scrutiny of a feasibility study and associated work as part of the examination process.

6.37. Therefore, the results of any detailed feasibility study and associated implementation plans must be presented to the examination for scrutiny by the Examining Authority and interested parties as soon as practicable. Should Guernsey be the chosen location, located outside UK jurisdiction, we have provided detailed comments on the issues raised in paragraphs 6.42-6.50 below.

Fish habitat enhancement – seagrass restoration

6.38. This is described by the Applicant as "a compensation measure to support the resilience of the other compensation measures to form a package of measures" (see page 50, paragraph 6.7.1.1, Volume A4, Annex 6.1 - Compensation Project Description, APP-057).

6.39. While the RSPB welcomes the work carried out by Hornsea Project Four on this topic, it remains its view (as set out in its relevant representation RR-033) that it cannot yet be considered even a supportive measure. This is due to a combination of the weak evidence base capable of linking this measure with measurable benefits to the target seabird species and the experimental nature of seagrass restoration itself such that its success as a habitat restoration measure per se cannot be guaranteed. As with bycatch mitigation, it too is also at the experimental research and trial stage.

6.40. Therefore, we agree with Natural England's comment (Seagrass, pages 9-10, Appendix C, RR-029):

"Natural England is of the view that fish habitat (seagrass) restoration cannot be considered compensation, as a link between seagrass restoration and the productivity of the impacted species cannot currently be demonstrated or quantified. We also consider it cannot be treated as a back-up to account for the high levels of uncertainty in other measures."

6.41. Like Natural England, we do not consider the measure to be compensation and so have not commented further at this stage.

Measures outside the UK

6.42. In addition to the points made above the RSPB also wishes to highlight the additional concern regarding some of the proposed compensation measures being outside the UK as set out in the Applicant's Hornsea Project Four: Derogation Information: Predator Eradication: Roadmap (Volume B2, Annex 8.4: Compensation measures for FFC SPA: Predator Eradication: Roadmap, APP-197).

6.43. Also, we understand that more information will be produced, the draft DCO provisions included within the Predictor Eradication Roadmap (APP-197) include (on pages 18 and 19):

Gannet Guillemot and Razorbill Compensation Measures based on the strategy for gannet, guillemot and razorbill compensation set out in the gannet guillemot and razorbill compensation plan and to include:
a) in the event that the undertaker must implement predator eradication and/or predator control measures
i. details of locatons [sic] where compensation measures will be deployed;
ii. details of how any necessary access rights, licences and approvals have or will be obtained and any biosecurity measures will or have been secured;
iii. an implementation timetable for delivery of the predator eradication and/or predator control measure that ensures that the measure has been implemented two years prior to operation of any turbine forming part of the authorised development;

6.44. The Applicant (on page 20) explains following questions being raised as to whether it is possible for a Generator to secure compensation measures outside England and the UK Continental Shelf, that,

"The latest draft DEFRA Guidance dated July 2021 does not preclude the implementation of compensation measures outside of the affected area, but states that in the case of mobile species, connectivity between populations should be considered (see Appendix A of B2.8.1 Compensation measures for FFC SPA: Bycatch Reduction: Ecological Evidence) for evidence of how guillemot and razorbill originating from North Sea colonies (i.e. in proximity to FFC SPA) are likely to migrate through or disperse to the waters in the English Channel. Depending on how mobile a species is, this may need to be considered in discussions with the Devolved Administrations. The Applicant has engaged with the Northern Irish government and with the State of Guernsey. The Applicant considers their continued support to be key to the delivery of the compensation measures."

6.45. The Applicant also seems to be relying on sites chosen e.g. at Alderney and Herm, being protected (page 20, paragraph 11.1.1.2, APP-197):

"…under the Convention on Wetlands of International Importance ("the Ramsar Convention"). These sites are located outside of the national site network. Nonetheless these sites are afforded the protection of Ramsar status. The National Planning Policy Framework in England affords Ramsar Sites and Proposed Ramsar Sites the same protection as European Sites. This is a policy position in England that cannot be reflected in Guernsey as they are a Crown Dependency and have never been subject to EU Law. The relevant applicable Ramsar policy is the 2020 Strategy for Nature. The Applicant has engaged with the State of Guernsey and has confidence that despite formal designation as an SPA not being possible, the 2020 Strategy for Nature envisages a proportionate level of protection. Further engagement with the State of Guernsey will continue to ensure the measure can be successfully implemented and monitored for the operational lifetime of Hornsea Four."

6.46. Although we appreciate both the Ramsar site protections and the relevant Guernsey policy, these in our view are not sufficient on their own to overcome concerns with these measures being fully secured and if necessary subject to enforcement measures. We also appreciate that the use of Grampian conditions - i.e. conditions requiring something to be done outside of the boundaries of the application site - are well precedented for planning permissions and therefore we may not have an issue, in principle.

6.47. However we believe there are two key points which would need to be considered:

(1) whether the Examiner and the Secretary of State can be satisfied that these compensation measures would/could be delivered and

(2) how the requirements would be enforced if not delivered or effective?

6.48. In respect of point (2) above, it is not entirely clear whether the provision of compensation outside the UK could properly be made a requirement of the DCO or deemed marine licence condition since outside the Secretary of State and/or the MMO's jurisdiction. More critically, perhaps, is how any failure to fulfil DCO requirements could be enforced. It may be possible that enforcement measures included the operation of the application (not just commencement of use) be stopped until measures were put in place and/or effective, since the commencement and the operation of application is within UK jurisdiction.

6.49. In respect of point (1), assuming that the matters raised above can be satisfactorily addressed, the question remains as to certainty of delivery and enabling the Examiners and the Secretary of State to have confidence in the measures proposed. The Applicant must demonstrate their ability to secure the necessary interest or rights in the land likely to be required for the compensation, provide detail on what consents might be required in order to carry out the measures and provide evidence that those consents would be forthcoming – in order for confidence to be had in these measures.

6.50. Currently the only information made available is lacking in these details and therefore as matters currently stand we do not believe confidence can be had in these, not matter what enforcement action may be included within the draft DCO.

Summary

6.51. Section 6 sets out the RSPB's views on the following compensation measures put forward by the Applicant:

- Offshore and onshore artificial nesting structures (kittiwake and gannet);
- Bycatch reduction (guillemot, razorbill and gannet);
- Predator eradication (guillemot and razorbill);
- Fish habitat enhancement – seagrass restoration.

6.52. Annex B (bycatch reduction) and Annex C (predator eradication) provide more detailed comments, drawing on additional RSPB expertise on these matters.

6.53. As set out above, the RSPB's key and most critical concern is that the Applicant has failed to put forward detailed, proven and location specific compensation measures for any impacted species. Notwithstanding this, the RSPB has as far as is practicable, provided more detailed comments in section 6 on each of the broad compensation measures.

6.54. The RSPB's current assessment on the Applicant's proposed measures is summarised below:

- Northern gannet:
    - Artificial nest sites: we consider the evidence submitted demonstrates clearly that Northern Gannet is dependent on natural nesting habitats i.e. less than 20 individual birds out of 1.5-1.8 million birds shown to have used some form of artificial nest sites. Therefore, at this time, in the absence of substantive and compelling evidence otherwise, we are not persuaded that artificial nesting structures can be considered even theoretically feasible as a compensation measure for this species;
    - Bycatch reduction: no information has been provided on what precise measures the Applicant proposes to carry out for gannet. As far as we are aware, no trial work is underway in respect of this species (c.f. guillemot and razorbill). Therefore, the RSPB reserves its position and refers the Examining Authority to its detailed comments on bycatch reduction set out in Annex B to this Written Representation. This sets out the nature of the evidence base we would expect to be presented to the examination for scrutiny by the Examining Authority and Interested Parties for any bycatch reduction proposal.
- Kittiwake:
    - Offshore artificial nest structures: the RSPB recognises the significant amount of work by the Applicant to explore and identify potential suitable offshore locations for putative kittiwake nesting structures. However, it is also apparent that a significant amount of further work is still required before

detailed proposals can be presented to the examination so that they can be fully scrutinised. At this stage, we consider the measure experimental. No precise location and design has been proposed, so it is not possible to evaluate and advise, or assess whether any site specific constraints could undermine confidence in long-term implementation;

- Onshore artificial nesting structures: the RSPB is concerned with onshore nesting structures, given the number of offshore wind farm projects (consented and submitted) already proposing such measures, with a particular preponderance in Suffolk. This raises concerns in the identification and securing of suitable locations capable of addressing the many uncertainties. In this context the RSPB shares Natural England's concern and is "not persuaded that further onshore artificial nesting structures are likely to result in sufficient benefits to produce compensation, given the number and location of such structures already proposed by submitted OWF projects. It has not been demonstrated there is a sufficient pool of nest-limited kittiwake recruits, suitable locations and/or prey availability available to meet and sustain the existing demand for this measure. We therefore recommend that this measure should not be taken forward by the Applicant".

- Guillemot and razorbill:

  - Predator eradication: the RSPB recognises that predator eradication or island restoration (IR) offers some potential to benefit guillemots and razorbills. However, we consider it premature to describe IR as a primary compensation measure for these two auk species. IR is a complex and highly specialised conservation measure. To succeed, it needs the effective targeting of 100% of the Invasive Non-Native Species (INNS) to achieve eradication, supported by comprehensive measures to keep the risk of reinvasion low and ongoing capacity to respond effectively to any biosecurity breach. A full-scale Feasibility Study is required, carried out by a suitable eradication expert contractor to international best practice standards, in order to firmly establish that the removal of Invasive Non-Native Species (INNS) for each island to be restored is feasible. At present, the RSPB does not have confidence that the predator eradication measure would benefit either guillemot or razorbill and so provide compensation. To determine whether an IR scheme will, rather than might, benefit either species in a selected location requires detailed scrutiny of a feasibility study and associated work as part of the examination process. The results of any detailed feasibility study and associated implementation plans must be presented to the examination for scrutiny by the Examining Authority and interested parties as soon as practicable;
  - Bycatch reduction: The RSPB does not accept that bycatch reduction can be described as a compensation measure, primary or otherwise, and considers this proposal is experimental research. As a result, we have no confidence that the proposed measures are viable, effective or can be delivered. The Applicant is proposing gillnet bycatch reduction measures, yet there are currently no recommended technical measures for gillnet bycatch mitigation.

The measures that are proposed and trialled are unproven and fail to meet the Agreement on the Conservation of Albatrosses and Petrels (ACAP) Best Practice Seabird Bycatch Mitigation Criteria and Definition. The research trials will only report in full in 2023 i.e. after the examination ends and the current decision date for the DCO. Before any measures can be deemed acceptable as bycatch mitigation they must be proven through a robust trial, with all data made available for peer-review. Peer-review will be necessary to tackle important questions about whether the initial trial truly demonstrates efficacy or not, and what else may be required (e.g. further data collection, robust commercial testing). Whilst we welcome the proposals to conduct some (limited) experimental research, as currently described, the proposal is not fit for purpose as a possible compensation measure. If the proposed bycatch mitigation measures were proven effective per se, based on our considerable experience in this field we are concerned about the achievability of uptake and implementation over a period of more than 35 years. This places a significant burden of proof on the Applicant to demonstrate how such sustained uptake will be achieved. This needs to be confirmed and guaranteed before the end of the examination so that it can scrutinised by the Examining Authority and interested parties.

- Fish habitat enhancement: While the RSPB welcomes the work carried out by Hornsea Project Four on this topic, it remains its view that it cannot yet be considered even a supportive measure. This is due to a combination of the weak evidence base capable of linking this measure with measurable benefits to the target seabird species and the experimental nature of seagrass restoration itself. As with bycatch mitigation, it too is also at the experimental research and trial stage. Like Natural England, we do not consider the measure to be compensation and so have not commented further.

7. RSPB comments on the draft Development Consent Order (DCO) and draft Deemed Marine Licence (DML)

Introduction

7.1. The draft Development Consent Order (DCO) including the drafted Deemed Marine Licence (DML) submitted as part of the application (APP-203), is complemented by an identical draft Schedule on Ornithology Compensation Measures contained in the various compensation roadmap documents submitted as part of the application:

- APP-188: B2.7.2 Compensation measures for FFC SPA: Offshore Artificial Nesting Roadmap
- APP-190: B2.7.4 Compensation measures for FFC SPA: Onshore Artificial Nesting Roadmap
- APP-195: B2.8.2 Compensation measures for FFC SPA: Bycatch Reduction: Roadmap
- APP-197: B2.8.4 Compensation measures for FFC SPA: Predator Eradication: Roadmap
- APP-199: B2.8.6 Compensation measures for FFC SPA: Fish Habitat Enhancement: Roadmap.

7.2. At this time, we have concentrated our comments on the draft schedule on Ornithology Compensation Measures set out in the various roadmap documents, but reserve the right to comment more widely on the draft DCO/DML document as it evolves during the examination.

7.3. We note that the Applicant submitted an updated draft DCO/DML document at Deadline 1 (REP1-002 (clean) and REP1-003 (tracked)). This includes a new Schedule 16 which contains a partial version of the Ornithology Compensation Measures schedule in the various roadmaps. It contains details on kittiwake compensation and fish habitat enhancement only. We will not make any comment on that incomplete schedule except to support Natural England's general comment at point 29 on page 18 of Appendix C in RR-029:

"It would be helpful if future iterations of the DCO conditions could be provided within the draft DCO as this is expected to be a live document during the Examination."

7.4. We would suggest that it would be helpful if future iterations include the full version of the draft Schedule on Ornithology Compensation Measures as set out in the various roadmap documents listed above. Square brackets could be used to indicate where the Applicant is including text on a without prejudice basis.

Brief outline of the scheme set out in the Ornithology Compensation Measures schedule

7.5. The draft schedule is divided in to 4 parts, setting out requirements in respect of:

- Part 1: The Hornsea Four Offshore Ornithological Engagement Group (OOEG)(including definitions of key terms). Requires a work plan to be submitted to and approved by the Secretary of State before specifics works can commence.

- Part 2: requirements in respect of Gannet and Kittiwake Compensation Measures
- Part 3: requirements in respect of Gannet, Guillemot and Razorbill Compensation Measures; and
- Part 4: requirements in respect of Fish Habitat Enhancement

7.6. Part 2 (Gannet and Kittiwake compensation measures) and Part 3 (Gannet, Guillemot and Razorbill Compensation Measures) adopt a similar basic approach, specifics varying depending on the nature of the compensation measure:

- An implementation and monitoring plan must be prepared and based on the strategy set out in its equivalent certified Compensation Plan document.
    - The implementation and monitoring plan must be submitted to the Secretary of State for approval in consultation with the MMO, relevant statutory nature conservation body (offshore) and Natural England and relevant local planning authority (onshore).
- The implementation and monitoring plan must include:
    - Details of locations of where compensation measures will be deployed, details of landowner/seabed agreements
    - Details of designs
    - An implementation timetable with the proposal of when the compensation measure should be in place in relation to operation of the any turbine. This varies from 1 to 2 breeding seasons before any wind turbine operates;
    - Details of proposed monitoring and reporting measures;
    - Recording of Hornsea Four OOEG meetings;
    - Details of any adaptive management measures and factors to trigger them;
    - Provision for reporting to the Secretary of State
- Requirements that:
    - The compensation measures must be implemented in accordance with the approved implementation and monitoring plan;
    - The Secretary of State must be notified of completion of the implementation measures;
    - The compensation must not be decommissioned without prior written approval of the Secretary of State
    - Any amendments under the schedule may be approved in writing by the Secretary of State and must be in accordance with the principles set out in the certified compensation plan. Amendments only to be approved where Secretary of State satisfied they are unlikely to give rise to materially new or different environmental effects from those considered in the certified compensation plan.

RSPB comments on the draft Ornithology Compensation Measures schedule

7.7. It is apparent that the Applicant proposes that a substantial amount of detail regarding the various compensation measures and the engagement group is to be deferred until post-

consent, relying on essentially outline proposals contained in the various "Compensation Plan" documents. These lack information on specific locations, designs, implementation methodologies, monitoring, adaptive management etc. This is particularly concerning given the highly experimental and unproven nature of some of the compensation measures being proposed (see sections 5 and 6 above and Annexes B and C to this Written Representation). As a result, considerable uncertainty surrounds the ability of the various proposed compensation measures to delivery the claimed ecological benefits.

7.8. For the reasons set out in sections 5 and 6 above (and associated annexes), the RSPB considers that the substantive detail on the proposed compensation measures is required during the examination phase so that it can be subject to detailed scrutiny by the Examining Authority and interested parties.

7.9. As we have set out in section 5 above (What level of detail is required on compensation measures?), the RSPB does not consider "in principle" equates to "outline" proposals such that all/most of the critical issues are deferred in order to be addressed post-DCO consent. We consider this completely undermines confidence in what the compensation measures will comprise and that the public interest to protect the coherence of the National Site Network can be secured.

7.10. Much greater detail and specificity about the location, design and implementation, monitoring and review of any proposed compensatory measures is needed to inform the application and examination process and enable proper public scrutiny by the Examining Authority and interested parties. This in turn should provide the Secretary of State with the necessary confidence as to whether those measures can be secured and implemented with a reasonable guarantee of success, thereby protecting the coherence of the National Site Network.

7.11. Therefore, we propose that the current outline draft Compensation Plan documents should be amended and filled out during the examination process to contain the necessary detail on the compensation measures that we have described above and elsewhere in this Written Representation and its annexes. A timetable for revisions to each document should be requested from the Applicant. At this point, the post-consent implementation and monitoring plans become much simpler documents designed to operationalise detailed compensation measures and associated monitoring schemes.

7.12. This approach aligns with the comment made by Natural England (point 8, page 14, Appendix C, RR-029):

"…we do not consider reliance on post-consent steering groups to agree important aspects of the [compensation] measures to be a sustainable approach to compensation design and delivery and to maintain that robust measures should be developed "up front" as part of the pre-application process."

7.13. Making substantive changes to the Compensation Plan now will provide the Examining Authority and interested parties a full opportunity to scrutinise and test the robustness of the proposed compensation measures, whether they will be ecologically effective in

practice, and whether they have been secured such that the overall coherence of the National Site Network for affected species will be protected.

7.14. This will help ensure the Examining Authority has as robust an evidence base to assess the merits of the package of compensation measures put forward by the Applicant and advise the Secretary of State as to whether or not it meets the requirements of the Habitats Regulations. As currently proposed, the necessary detail and evidence base will not be before the Examining Authority.

Additional comments on the draft Ornithology Compensation Measures schedule

7.15. The RSPB notes that Natural England has made detailed comments on or related to the current wording of the Ornithology Compensation Measures Schedule at Appendix C of its relevant representation (RR-029): see pages 14 to 18 (points 8-29). The RSPB has reviewed those comments and is in broad agreement with them. We will await a revised draft of the DCO/DML before commenting in detail.

7.16. We note that Natural England shares our concerns with respect to the curtailed lead-in times to implementing the compensation measures in relation to when damage is predicted to occur from the offshore wind farm. As set out in section 5 above, we consider this should be based on the breeding ecology requirements of the individual seabird species. The current proposal for 1 or 2 years is inadequate and requires justification.

7.17. As set out in section 5 and in compliance with Government guidance, the lead-in time for implementing ecologically functional compensation before damage must be related to the time at which the damaging impact is predicted to occur. This will vary depending on whether the impact arises from the physical presence of the windfarm (e.g. displacement) or the operation of the wind farm (e.g. collision risk). Therefore, the lead-in times for each compensation measure must be based on a careful assessment of the affected species' population breeding ecology requirements and the timing of the damaging impact.

7.18. As part of the more detailed information required to be included in the various Compensation Plans, we request that it include draft provisions relating to the operation of the proposed Offshore Ornithology Engagement Group, so that they can be scrutinised as part of the examination process. Based on historic and recent experience, we consider it important that the basis on which such groups are established are transparent and available for scrutiny in advance and as part of the consenting process. In particular:

- Terms of reference, including what is in or outside of scope for the group to consider;
- Role and status of different parties;
- Reporting requirements and public availability of monitoring reports;
- Dispute resolution mechanisms;
- Any confidentiality provisions.

7.19. These oversight groups will need to remain in place for the lifetime of the compensation measures, hence it is important to ensure the basis on which they operate is understood in

advance of consent. We consider this a vital part of ensuring transparency and accountability on how oversight of any required compensation measures will be carried out.

Summary

7.20. At this time, we have concentrated our comments on the draft schedule on Ornithology Compensation Measures set out in the various roadmap documents, but reserve the right to comment more widely on the draft DCO/DML document as it evolves during the examination. We would suggest that it would be helpful if future iterations include the full version of the draft Schedule on Ornithology Compensation Measures as set out in the various roadmap documents listed above. Square brackets could be used to indicate where the Applicant is including text on a without prejudice basis.

7.21. We summarise the scheme set out in the draft Ornithology Compensation Measures schedule.

7.22. It is apparent that the Applicant proposes that a substantial amount of detail regarding the various compensation measures and the engagement group is to be deferred until post-consent, relying on essentially outline proposals contained in the various "Compensation Plan" documents. These lack information on specific locations, designs, implementation methodologies, monitoring, adaptive management etc. As a result, considerable uncertainty surrounds the ability of the various proposed compensation measures to delivery the claimed ecological benefits.

7.23. For the reasons set out in sections 5 and 6 (and associated annexes), the RSPB considers that the substantive detail on the proposed compensation measures is required during the examination phase so that it can be subject to detailed scrutiny by the Examining Authority and interested parties.

7.24. Therefore, we propose that the current outline draft Compensation Plan documents should be amended and filled out during the examination process to contain the necessary detail on the compensation measures that we have described above and elsewhere in this Written Representation and its annexes.

7.25. Making substantive changes to the Compensation Plan now will provide the Examining Authority and interested parties with a full opportunity to scrutinise and test the robustness of the proposed compensation measures, whether they will be ecologically effective in practice, and whether they have been secured such that the overall coherence of the National Site Network for affected species will be protected.

7.26. This will help ensure the Examining Authority has a robust evidence base to assess the merits of the package of compensation measures put forward by the Applicant and advise the Secretary of State as to whether or not it meets the requirements of the Habitats Regulations. As currently proposed, the necessary detail and evidence base will not be before the Examining Authority.

7.27. We make various additional comments on the draft schedule.