



Hornsea Project Four

Compensation measures for FFC SPA: Gannet Bycatch Reduction: Roadmap

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Glossary

Term	Definition
Appropriate Assessment (AA)	An assessment to determine the implications of a plan or project on a European site in view of the site's Conservation Objectives. An AA forms part of the Habitats Regulations Assessment and is required when a plan or project is likely to have a significant effect on a European site.
Common guillemot biogeographic population	The north east Atlantic breeding population of guillemot which includes the <i>Uria aalge albonis</i> and <i>Uria aalge aalge</i> subspecies and includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range.
Compensation / Compensatory Measures	If an Adverse Effect on the Integrity on a designated site is determined during the Secretary of State's Appropriate Assessment, compensatory measures for the impacted site (and relevant features) will be required. The term compensatory measures is not defined in the Habitats Regulations. Compensatory measures are however, considered to comprise those measures which are independent of the project, including any associated mitigation measures, and are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the national site network is maintained.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
HRA Derogation Provisions	Provisions set out under Regulations 64 and 68 of the Conservation of Habitats and Species Regulations 2017 and Regulations 29 and 36 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 that permit a plan or project with AEOI on a European site(s) to be consented provided the tests derived from Article 6(4) are met i.e. there are no alternative solutions, there are imperative reasons of overriding public interest and that necessary compensation measures are secured.
European site	A Special Area of Conservation (SAC) or candidate SAC (cSAC), a Special Protection Area (SPA) or a site listed as a Site of Community Importance (SCI). Potential SPAs (pSPAs), possible SACs (pSACs) and Ramsar sites are also afforded the same protection as European sites by the National Planning Policy Framework – para 176 (Ministry of Housing, Communities and Local Government, 2019). European offshore marine sites are also referred to as "European sites" for the purposes of this document.
Habitats Directive	European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora
Habitats Regulations	The Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017
Habitats Regulations Assessment (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European sites. The process consists of up to four stages: screening, appropriate assessment,

Term	Definition
	assessment of alternative solutions and assessment of imperative reasons of over-riding public interest (IROPI) and compensatory measures
Hornsea Project Four Offshore Wind Farm	The proposed Hornsea Project Four Offshore Wind Farm project. The term covers all elements of the project (i.e., both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
In-Combination Effect	The effect of Hornsea Four in-combination with the effects from other plans and projects on the same feature/receptor.
National Site Network	The network of European Sites in the UK. Prior to the UK's exit from the EU and the coming into force of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 these sites formed part of the EU ecological network known as "Natura 2000".
Nature Directives	The EU Habitats Directive (European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and EU Wild Birds Directive (79/409/EEC amended in 2009 to become Directive 2009/147/EC)
Net zero by 2050 commitment	The UK governments legally binding target of achieving net zero greenhouse gas emissions by 2050 as set out in the Climate Change Act 2008 (2050 Target Amendment) Order 2019
Offshore Ornithology Engagement Group (OOEG)	The Hornsea Four Offshore Ornithology Engagement Group means the group that will assist, through consultation the undertaker in relation to the delivery of each compensation measures as identified in the kittiwake compensation plan, the gannet compensation plan and the guillemot and razorbill compensation plan. Matters to be consulted upon to be determined by the Applicant and will include site selection, project/study design, methodology for implementing the measure, monitoring, and adaptive management options as set out in the kittiwake compensation plan, the gannet compensation plan and the guillemot and razorbill compensation plan.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).
Planning Inspectorate (PINS)	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Razorbill biogeographic population	The breeding population of razorbill which includes <i>Alca torda islandica</i> and includes individuals from the Flamborough and Filey Coast SPA (Stroud <i>et al.</i> , 2016). Proposed compensation measures will be undertaken within this populations breeding and migratory range
Report to Inform Appropriate Assessment	The information that the Competent Authority needs to inform an Appropriate Assessment at Stage 2 of the HRA process and which has been provided by the Applicant in the RIAA (B2.2: Report to Inform Appropriate Assessment Part 1 (submitted at Deadline 5), Part 2 (REP2-005) , Part 3 (AS-013) , Part 4 (REP1-012) Part 5-12 (APP-171-178)).
Special Area of Conservation (SAC)	Strictly protected sites designated pursuant to Article 3 of the Habitats Directive (via the Habitats Regulations) for habitats listed on Annex I and species listed on Annex II of the directive.

Term	Definition
Special Protection Area (SPA)	Strictly protected sites designated pursuant to Article 4 of the Birds Directive (via the Habitats Regulations) for species listed on Annex I of the Directive and for regularly occurring migratory species.
The Hornsea Four Offshore Ornithology Engagement Group	The Hornsea Four Offshore Ornithology Engagement Group means the group that will assist, through consultation the undertaker in relation to each compensation measure, site selection, project/study design, methodology for implementing the measure, monitoring, and adaptive management options as identified in the kittiwake compensation plan, the gannet compensation plan and the guillemot and razorbill compensation plan.

Acronyms

Term	Definition
CfD	Contracts for Difference
DCO	Development Consent Order
FFC	Flamborough and Filey Coast
FID	Final Investment Decision
GCIMP	Gannet Compensation Implementation and Monitoring Plan
MMO	Marine Management Organisation
NGO	Non-Governmental Organisation
NFFO	National Federation of Fisheries Organisation
OOEG	Offshore Ornithology Engagement Group
PINS	Planning Inspectorate
RSPB	Royal Society for the Protection of Birds
SNCBs	Statutory Nature Conservation Bodies
SoS	Secretary of State
SPA	Special Protection Area
UK	United Kingdom

1 Introduction

- 1.1.1.1 This Gannet Bycatch Reduction Roadmap document provides an overview of the next steps for implementation of bycatch reduction as a compensation measure for Hornsea Four, if deemed necessary by the Secretary of State (SoS) following the Appropriate Assessment. It should be noted that this is a 'live' document and, should compensation be required, it will be added to or revised as the Development Consent Order (DCO) application for Hornsea Four progresses. This Roadmap sets out a clear pathway to demonstrate that the compensation measure can be secured and that the mechanism for delivery of the compensation measure can be implemented.
- 1.1.1.2 Following the Applicant's submission, the Applicant has revisited its conclusion of no potential for an adverse effect on integrity (AEol) in respect of the kittiwake feature of the Flamborough and Filey Coast Special Protection Area (FFC SPA) from Hornsea Four in combination with other plans and projects. It is important to note however that the Applicant maintains its position of no AEol alone or in combination for all other qualifying species of the FFC SPA and for all other European sites. In light of the Applicant's updated position on kittiwake the Applicant has separated the compensatory measures for gannet and kittiwake into separate Roadmaps, Compensation Plans (and consequently separate Implementation and Monitoring plans). Upon reflection the Applicant has also separated the Roadmaps, Compensation Plans (and consequently the Implementation and Monitoring Plans) for the auk species (guillemot and razorbill) and gannet. All of the compensation measures remain "without prejudice" but this Roadmap has been created to focus solely on gannet.

2 Description and scope

- 2.1.1.1 Bycatch reduction forms part of a suite of compensation measures for gannet, also including artificial nesting and fish habitat enhancement, to compensate for the number of seabirds, specifically northern gannet, *Morus bassanus* (gannet) that may be at risk of collision and displacement from the operation of the Hornsea Four Wind Farm (as set out in the G5.17 FFC SPA: Gannet Compensation Plan; submitted at Deadline 5). The Applicant proposes to provide primary compensation for gannet through the reduction of bird bycatch in selected fisheries within the gannet biogeographic region. Bycatch is the incidental capture of non-target species in fisheries which can present a significant pressure on seabird populations (Miles *et al.*, 2020). Within recent decades, seabird populations globally have reduced significantly, largely due to commercial fisheries (direct competition and bycatch) (Croxall *et al.*, 2012). It has been estimated globally that hundreds of thousands of seabirds are killed each year in gillnets (400,000; Żydelski *et al.*, 2013) and longline fisheries (320,000; Anderson *et al.*, 2011). Despite this, monitoring of the issue is lacking with onboard observer monitoring coverage relatively low compared to the scale of commercial fishing (Pott and Wiedenfeld, 2017).
- 2.1.1.2 The reduction of seabird bycatch by the Applicant will be achieved through the use of bycatch reduction equipment. There are multiple types of reduction techniques that can be used to reduce the interaction between birds and fishing equipment. The Evidence Report [G1.42 Compensation measures for FFC SPA: Gannet Bycatch Reduction: Ecological Evidence \(REP1-064\)](#) (submitted at Deadline 1) sets out the ecological evidence for bycatch reduction measures and supports likely successful compensation measures. Bycatch

reduction techniques are designed to be suited to specific gear types and bycatch species. Defra and Cefas' joint Clean Catch initiative recommends bird bycatch reduction measures including modifications to fishing gear, changes to fishing and processing techniques, and devices for attachment to fishing gear (Clean Catch UK, 2020). The proposed reduction methods considered as part of a suite of compensation measures are line weighting, hook shielding, and above water deterrents (e.g., streamers).

2.1.1.3 Following the collation of ecological evidence for gannet with regard to bycatch, the Applicant has progressed the following workstreams to further the knowledge base:

- Held meetings with BirdLife International and RSPB to progress multi-species bycatch reduction techniques and determined a suitable approach to reducing bycatch for gannet;
- Developed and undertaken a seabird bycatch monitoring project for gillnets within an active fishery in the south east and south west of England during the non-breeding season of 2021/2022;
- Liaised with UK longlining vessels operating within the gannet bio-geographical region (and within UK waters) to determine the level of gannet bycatch;
- Commenced discussions with the National Federation of Fishermen's Organisations (NFFO) on gannet bycatch;
- Produced a fisheries questionnaire (which has been checked by independent social scientists) to ascertain bycatch levels for the species. This questionnaire has been distributed to UK fishers in the south east of the UK, Danish trawlers and Spanish longlining; and
- Continued consultation with Natural England and the RSPB on bycatch reduction for gannet via the compensation workshop process.

2.1.1.4 As mentioned above, this Roadmap is a 'live' document, with updates expected as further information is collated by the Applicant.

2.2 Strategic Compensation

2.2.1.1 The Policy paper 'British Energy Security Strategy'¹ (BESS) published by BEIS in April 2022 recognises the even greater need for rapid development of offshore wind farms committing to 'cut the process time by over half' and 'helping to speed up delivery timelines'. The Applicant refers to [G5.8 Ørsted's approach to strategic ecological compensation](#) (submitted at Deadline 5) which defines strategic compensation including its purpose and the mechanism for funding (the Marine Recovery Fund ("MRF") or equivalent fund). It is considered important that Hornsea Four is able to place reliance upon the delivery of strategic compensation, in addition to the evidence submitted to date for project specific compensation measures.

2.2.1.2 Further to this the law and guidance require that the Secretary of State has a rational basis for finding that he has discharged his duty to secure that necessary compensation measures can be delivered post-implementation of the development. The delivery of strategic compensation substantiates the likelihood of delivery of the compensation measure. For

¹ <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

example, Hornsea Four will be able to take advantage of the ecological evidence obtained through the delivery of strategic pilots, alongside evolving plans for strategic monitoring (also committed to in the BESS). The ability to develop best practice for the delivery of measures would also be of benefit to those projects in the planning system. Outwith the MRF the Applicant continues to work closely with other developers currently in the planning system who have been tasked with delivering compensation measures to find opportunities for early collaboration. This could for example lead to the sharing of artificial nesting structures on or offshore. The Applicant is therefore open to early collaboration with other developers in the delivery of compensation measures and will, where appropriate, identify opportunities for co-location of measures. This could form an integral part in the discharge of the Applicants obligations but will always be subject to maintaining the projects timescales for delivery to ensure the overarching policy set out in the BESS is achieved.

- 2.2.1.3 The Applicant refers to the Marine Net Gain – Consultation on the principles of marine net gain dated 7 June 2022 (Defra, 2022), which includes reference to the newly announced Marine Recovery Fund (MRF). The Applicant originally committed at para. 3.1.1.7 of the [B2.6 Compensation Measures for FFC SPA Overview \(APP-183\)](#) to contribute to a fund (£100,000 per year for 5 years) to develop further research to support evidence gathering, such as the research led by the Offshore Wind Strategic Monitoring and Research Forum. This commitment is also detailed in the Applicant's [B2.10 Without Prejudice Derogation Funding Statement \(APP-202\)](#) and [B2.6.2 Appendix A Ørsted's Strategic Compensation Approach \(APP-185\)](#). The Applicant has updated their position and now considers the MRF or other equivalent fund to be an appropriate fund for the sums to be paid and has drafted specific wording to include in the DCO.
- 2.2.1.4 The Applicant has taken a further step by committing to pay an agreed sum into the MRF either in substitution for the delivery of one or more of the proposed compensation measures (such sum to be agreed in consultation with the Department for Environment Food and Rural Affairs (DEFRA) prior to approval of the relevant implementation plans). Alternatively, the contribution could be paid as an adaptive management measure.
- 2.2.1.5 The proposal to contribute to the MRF has been included as part of the proposed compensation plans upon which each of the implementation plans will be based. The Applicant has also included draft DCO wording confirming that the implementation plans must also include the purpose of the contribution (i.e. as an alternative to the delivery of a specific compensation measure or as an adaptive management measure) and the amount and timing of the contribution (see [Section 9](#)).

3 Compensation Levels

- 3.1.1.1 If the Secretary of State concludes an AEoI for gannet, the reduction in mortality bycatch reduction can provide sufficient compensation for the required compensation population. Based upon a precautionary assessment presented in [Table 2](#) in Revision 2 of [B2.6 Compensation measures for FFC SPA: Overview](#) (updated at Deadline 5)), bycatch reduction

can provide sufficient compensation, and can be scaled if deemed necessary. The Applicant therefore has a high degree of confidence of the feasibility of this compensation measure.

4 Next Steps

- 4.1.1.1 The Applicant will continue discussions on the scale and location of gannet bycatch and the potential implementation of reduction techniques within UK waters and within the migratory pathway of gannet (specifically in relation to longline bycatch).
- 4.1.1.2 The bycatch reduction techniques currently being considered by the Applicant are presented within the [G1.42 Compensation measures for FFC SPA: Gannet Bycatch Reduction: Ecological Evidence \(REP1-064\)](#). Of the potential measures presented within the report, hook shielding devices (such as Hookpod) remove the risk of bycatch to all bird species by preventing access to the hook. As a result, the method is independent of seabird species, with a significant degree of seabird bycatch reduction presented by research undertaken on various seabird species (and presented within the aforementioned report). The Applicant is therefore confident that a suitable bycatch reduction measure exists, and that it can be readily secured if required (the developers of Hookpod also produce the Looming Eye Buoy which has been purchased and trialled by the Applicant for guillemot and razorbill).
- 4.1.1.3 If the Applicant is required to deliver compensation for gannet, the Applicant will work with the key stakeholders already identified, to implement bycatch reduction technology and undertake a subsequent monitoring project for the lifetime of the measure to ensure implementation success.
- 4.1.1.4 Work will be undertaken with local representatives and contacts within the target fishery areas (determined by fisheries consultation, published literature (i.e., Northridge *et al.*, (2020) and bycatch risk mapping undertaken by the Applicant and presented in [G1.42 Compensation measures for FFC SPA: Gannet Bycatch Reduction: Ecological Evidence \(REP1-064\)](#) (submitted at Deadline 1)) to ensure uptake of the bycatch reduction equipment. It is acknowledged by the Applicant that use of the equipment may need to be incentivised to ensure uptake and continued usage.
- 4.1.1.5 To ensure that the equipment continues to be used and that further evidence can be gathered to confirm the effectiveness of the measures, a monitoring programme will be required during the operational use of the technology, should they be taken forward as a compensation measure. There are many examples of fishing gear monitoring around the world, which include but are not limited to, onboard observers, gear cameras, self-reporting, blue-tooth tags and equipment trackers. The exact method of monitoring will be decided based upon further evidence gathering and discussion with industry experts. However, based on the positive results of a dual camera monitoring system used during the Applicant's guillemot and razorbill bycatch reduction technology selection phase (see [B2.8.2 Compensation measures for Flamborough and Filey Coast \(FFC\) Special Protection Area \(SPA\): Guillemot and Razorbill Bycatch Reduction \(REP2-011\)](#) for further details), the same system may be used at time during the lifetime of the project to complement the other monitoring measures.
- 4.1.1.6 Hornsea Four is expected to operate for 35 years following construction. If required, the accepted measure(s) will be used and monitored throughout the operational lifespan of the

Wind Farm. Following the monitoring programme, overall measure uptake and success of the reduction measure, the equipment may continue to be used as a bycatch deterrent.

- 4.1.1.7 Having 12 operational windfarms in UK waters, the Applicant, has a longstanding relationship with the UK fishing industry, especially on the east and west coasts of England where positive and trusting relationships have been built over time. The Applicant also supports local fishing industries, proving good-will funding to fishers, and related organisations, that work within the vicinity of their wind farms which has further encouraged good relationships. The Applicant has a track record of encouraging co-existence between renewable energy development and the fishing industry and is often used as an example of best practise between the industries. The Applicant is positive that their pre-existing relationship with the fishing industry and representatives will aid the technology selection phase and compensation measure implementation.
- 4.1.1.8 The Applicant has started, and will continue, to enhance connections and relationships with fishers in regions of England, where netting activity is high. The Applicant has a high degree of confidence in the feasibility of delivering the compensation measure. Throughout the development of the technology selection phase and compensation implementation the Applicant will seek to further strengthen fisheries engagement, collaboration and relationships, in a similar way to the bycatch reduction technology selection phase undertaken for auks (see [G5.13 Bycatch Reduction Technology Selection Phase Summary](#) (submitted at Deadline 5)).

5 Indicative timescale for delivery and implementation

5.1.1.1 The high-level anticipated programme presented below ([Table 1](#)) is applicable to the implementation and delivery of the bycatch reduction compensation measure. Implementation of compensation measures will be subject to successful progression of the Hornsea Four project and determination of the need for compensation by the SoS. The timing of implementation of the bycatch reduction compensation measure is provisional as the timeframe for Examination, consent award, reaching final investment decision (FID) and Contracts for Difference Allocation Round Five and Six, have not yet been set. The programme has been carefully considered to ensure timely delivery of the compensation measure. As bycatch reduction deals with the direct reduction in adult mortality of gannet, no lead in time is required. This allows a potential surplus to be generated by the measure if implemented in advance of the generation of first power by the Applicant.

Table 1: Indicative timescale for delivery and implementation

Activity	Year	2022	2023	2024	2025	2026	2027	2028
Design of measure	2022							
Identify final location and method for measure	2022 2023							
Scale and package consideration	2023							
Anticipated Hornsea Four DCO Granted	2023							

Activity	Year	2022	2023	2024	2025	2026	2027	2028
Compensation Implementation ²	2022/2023-TBC							
Bycatch implementation detailed design	2024							
Establishment of Offshore Ornithology Engagement Group (OOEG)	Following consent award							
Gannet Compensation Implementation and Monitoring Plan (GCIMP)	Following consent award							
GCIMP submitted to SoS	Following consent award							
Offshore Construction of Hornsea Four Foundations	2026							
Offshore Construction of Hornsea Four Offshore Turbines	2027							
First Power (partially operational windfarm)	2028							

5.1.1.2 The Wind Farm is expected to operate for 35 years following construction. The accepted compensation measure(s) would be monitored throughout the operational lifespan of the Wind Farm.

5.1.1.3 The Policy paper ‘British Energy Security Strategy’ published by BEIS in April 2022³ recognises the even greater need for rapid development of offshore wind farms committing to ‘cut the process time by over half’ and ‘helping to speed up delivery timelines’.

6 Consultation

6.1.1.1 Post-consent, a steering group named the Offshore Ornithology Engagement Group (OOEG) shall be convened by the Applicant to assist the design, implementation, reporting, any necessary adaptive management and other relevant matters of the compensation measures as determined by the Applicant. The OOEG core members would be the relevant SNCB(s) and the MMO. The RSPB and NFFO would also be invited to form part of the OOEG as advisors. The purpose of this group would be to help shape and inform the nature and delivery of the compensation post consent.

6.1.1.2 A Gannet Compensation Implementation and Monitoring Plan (GCIMP) will be produced. The GCIMP (following the content in the outline GCIMP ([G5.15 Outline Gannet Compensation Implementation and Monitoring Plan Bycatch](#) (submitted at Deadline 5)) will document all the proposed compensation measures for gannet (including mechanisms and programme

² Due to the uncertainty regarding Allocation Round 5 and 6 of the Contracts for Difference (CfD) scheme the date cannot be confirmed at this time.

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1069969/british-energy-security-strategy-web-accessible.pdf

for delivery, monitoring, adaptive management, reporting). The OOEG will be consulted during development of the GCIMP. The GCIMP will be submitted to the Secretary of State for approval.

- 6.1.1.3 The implementation phase will involve consultation with stakeholders via the OOEG process to ensure cooperation across the monitoring aspects of the compensation measure. The proposed implementation process described below will be documented in the GCIMP and will be submitted to the Secretary of State for approval.
- 6.1.1.4 The implementation of the compensation measures will be monitored to ensure that the bycatch reduction method is being applied in accordance with the GCIMP. The details of the monitoring phase of the compensation measure will be discussed with the OOEG and will be set out within the GCIMP for approval by the Secretary of State.
- 6.1.1.5 Monitoring will inform any adaptive management required and will be discussed with OOEG members before implementation. This will be continued until Hornsea Four has been decommissioned or a determination is made by the Secretary of State following consultation with the relevant statutory nature conservation body, that compensation is no longer required.
- 6.1.1.6 Reporting of the results of implementation of the compensation measure will be carried out according to timescales discussed with the OOEG and set out in the GCIMP.

7 Design and implementation of the bycatch reduction project

- 7.1.1.1 An extensive literature review of bycatch reduction technology was undertaken to identify a suitable technology to reduce gannet bycatch (see [Appendices B and C in G1.42 Compensation measures for FFC SPA: Gannet Bycatch Reduction: Ecological Evidence \(REP1-064\)](#) (submitted at Deadline 1)). The most promising technique identified for longline bycatch reduction was the Hookpod (hook shielding), with evidence showing reduction of seabird bycatch by 95% in longline fisheries (see [Appendix B in G1.42 Compensation measures for FFC SPA: Gannet Bycatch Reduction: Ecological Evidence \(REP1-064\)](#) (submitted at Deadline 1)). The Hookpod covers the baited hook until it reaches a certain depth and can therefore be set beyond the depth range for diving gannet. Hook shielding is independent of seabird behavioural responses as it removes the risk factor (the hook) and therefore the bycatch risk for the majority of seabird species. This demonstrates evidence of mitigation success using such techniques from other seabird species, such as albatross, to act as proxy for gannet.
- 7.1.1.2 To continue to progress the bycatch reduction workstream for gannet (if deemed necessary by the Secretary of State), the Applicant will continue discussions on the level of gannet bycatch and potential reduction techniques within UK waters and within the migratory pathway of gannet (specifically in relation to longline bycatch). The full detail of the final

design and implementation of the bycatch reduction project will be agreed through the OOEG and set out within the GCIMP.

8 Monitoring and adaptive management

8.1.1.1 A detailed monitoring and adaptive management protocol will be provided in the GCIMP. This will be produced in consultation with OOEG members and other relevant parties, so it is fit for purpose.

8.2 Monitoring

8.2.1.1 A monitoring package will be designed with the delivery partner and the OOEG. Monitoring will focus on the progress and confirmation of a reduction in bycatch numbers for gannet. The monitoring of results will be dependent on the implementation method. However, reduction monitoring for bycatch of other taxa is well known and synergies can be drawn and incorporated into the monitoring relevant to gannet. This would be developed with experienced stakeholders from both a conservation and fisheries background to ensure monitoring requirements are met.

8.2.1.2 Monitoring will continue for the operational phase of the compensation measure, at a frequency and method to be detailed in the GCIMP. It is envisaged that the delivery partner would lead the monitoring component of this measure.

8.3 Adaptive Management

8.3.1.1 Adaptive management is an iterative, post-consent process which combines management measures and subsequent monitoring with the aim of improving effectiveness whilst also updating knowledge and improving decision making over time. An adaptive management plan will be produced and outlined in the GCIMP, which would list a set of options to ensure the long-term resilience of the measure. This process would be developed in consultation with the OOEG. If it becomes clear that some of the assumptions relating to key parameters that influence the establishment of the measure are not being realised as anticipated, adaptive management measures will be implemented to improve effectiveness and another technique or fishery type may be trialled and chosen for bycatch reduction, in consultation with the OOEG.

8.3.1.2 The Applicant is heavily involved in advancing the offshore wind industry's strategic compensation outlook. They have initiated and led the composition of strategic compensation groups; drawing together offshore wind developers and government bodies to increase knowledge and develop synergies to deliver compensation which will secure renewable energy and support the Government's ambitious energy targets. The Applicant will ensure it stays abreast of the advancements made by the group and is well placed to support and join any strategic compensation options developed by the fund.

8.3.1.3 An alternative approach than that outlined above is for the Applicant to contribute to a fund as an adaptive management measure. Reference can be made to the *Marine Net Gain – Consultation on the principles of marine net gain* dated 7th June 2022 (Defra, 2022), which includes reference to the newly announced Marine Recovery Fund (MRF). The MRF proposes a "contributions based approach" to net gain requirements, but has been given a broad application to be used to develop strategic compensation. The MRF forms part of the Offshore Wind Environmental Improvement Package of the BESS. The Applicant has

proposed wording below in [Section 9](#) in relation to the option to contribute to the MRF for adaptive management.

9 Draft DCO wording

Commentary:

Article 40 of the draft DCO currently gives effect to Schedule 16 of the draft DCO:

Compensation provisions

40. Schedule 16 (compensation to protect the coherence of the national site network) has effect.

Part 1 and Part 2 of Schedule 16 makes provision for compensatory measures for kittiwake.

Part 3 of Schedule 16 makes provision for a contribution to the Marine Recovery Fund.

Part 4 of Schedule 16 makes provision for fish habitat enhancement.

If necessary, the Secretary of State could amend Schedule 16 to secure compensatory measures for gannet, guillemot and razorbill, in accordance with the draft provisions set out below.

For the avoidance of doubt, no amendment would be required to article 40, which as noted above already gives effect to the entirety of Schedule 16.

Schedule 16

COMPENSATION TO PROTECT THE COHERENCE OF THE NATIONAL SITE NETWORK

Part 1

OFFSHORE ORNITHOLOGY ENGAGEMENT GROUP

1. In this Schedule—

“Defra” means the Department for the Environment, Food and Rural Affairs.

“the FFC” means the site designated as the Flamborough and Filey Coast Special protection Area; “GCIMP” means the gannet compensation implementation and monitoring plan for the delivery of measures to compensate for the predicted loss of adult gannet from the FFC as a result of the authorised development;

“GRCIMP” means guillemot and razorbill compensation implementation and monitoring plan for the delivery of measures to compensate for the predicted loss of adult guillemot and razorbill from the FFC as a result of the authorised development;

“KCIMP” means the kittiwake compensation implementation and monitoring plan for the delivery of measures to compensate for the predicted loss of adult kittiwakes from the FFC as a result of the authorised development;

“the gannet compensation plan” means the document certified as the gannet compensation plan by the Secretary of State for the purposes of this Order under article 38 (certification of plans and documents, etc);

“the guillemot and razorbill compensation plan” means the document certified as the guillemot and razorbill compensation plan by the Secretary of State for the purposes of this Order under article 38 (certification of plans and documents, etc);

“the Hornsea Four Offshore Ornithology Engagement Group” or “H4 OOEG” means the group that will assist, through consultation, the undertaker in the delivery of the compensation measures identified in the kittiwake compensation plan, the gannet compensation plan and the guillemot and razorbill compensation plan;

“the kittiwake compensation plan” means the document certified as the kittiwake compensation plan by the Secretary of State for the purposes of this Order under article 38 (certification of plans and documents, etc.);

2. “the Marine Recovery Fund” means the fund operated by Defra pursuant to the Offshore Wind Environmental Improvement Package of the British Energy Security Strategy (April 2022) for the implementation of strategic compensation or any equivalent fund established by a Government body for that purpose.

“the offshore compensation measures” means, as the context requires, bycatch reduction and/or the offshore nesting structure(s); and “the onshore compensation measure” means, as the context requires, predator eradication and/or the onshore nesting structure(s).

3. Work Nos. 1, 2, 3, 4 and 5 together with any associated development offshore may not be commenced until a plan for the work of the H4 OOEG has been submitted to and approved by the Secretary of State, such plan to include—

terms of reference of the H4 OOEG;

details of the membership of the H4 OOEG which must include—

the MMO and the relevant statutory nature conservation body as core members for the offshore compensation measures;

the relevant local planning authority and statutory nature conservation body as core members for the onshore compensation measures;

the RSPB and The Wildlife Trust as advisory members, for both the onshore compensation measures and/or the offshore compensation measures subject to their area of expertise;

details of the proposed schedule of meetings, timetable for preparation of the KCIMP, the GCIMP and the GRCIMP and reporting and review periods;

the dispute resolution mechanism and confidentiality provisions; and

4. the scope of work to be limited to the topics for discussion as identified by the appointed chair to include in relation to the compensation measure, monitoring and adaptive management.

Part 2

KITTIWAKE COMPENSATION

1. Following consultation with the H4 OOEG, the KCIMP must be submitted to the Secretary of State for approval in consultation with the MMO and relevant statutory nature conservation body for the offshore compensation measure (if required), and with the relevant local planning authority and relevant statutory nature conservation body for the onshore compensation measure (if required). The KCIMP must be based on the strategy for kittiwake compensation set out in the kittiwake compensation plan and include—

- a. details of location where the compensation measure will be delivered, and in the event an onshore structure is required, details of landowner agreement(s) and in the event an offshore structure is required, details of any relevant seabed agreement(s);
 - b. details of the design of the artificial nesting structure; including the projected number of nests that will be accommodated on the structure, and how risks from avian or mammalian predation and for an onshore nesting structure how unauthorised human access will be mitigated;
 - c. an implementation timetable for delivery of the artificial nesting structure, such timetable to ensure that the structure is in place to allow for at least three full kittiwake breeding seasons prior to operation of any turbine forming part of the authorised development. For the purposes of this paragraph each breeding season is assumed to have commenced on 1st April in each year and ended on 31st August;
 - d. details of the maintenance schedule for the artificial nesting structure;
 - e. details for the proposed ongoing monitoring of the measure including—
 - i. survey methods;
 - ii. survey programmes; and
 - iii. colony and productivity counts;
 - f. recording of H4 OoEG consultations;
 - g. details of any adaptive management measures, with details of the factors used to trigger any such measures; and
 - h. provision for reporting to the Secretary of State, to include details of the use of the structure by breeding kittiwake to identify barriers to success and target any adaptive management measures.
 - i. provision for the option to be exercised at the sole discretion of the undertaker to pay a contribution (in addition to the sum stipulated in Part 3 of this Schedule) to the Marine Recovery Fund wholly or partly in substitution for the onshore compensation measure and/or the offshore compensation measure or as an adaptive management measure for the purposes of paragraph 1.g. of this Part of this Schedule. The sum of the contribution to be agreed between the undertaker and Defra in consultation with the OoEG and included in the KCIMP.
2. Paragraphs 3, 4 and 5 of this Part of this Schedule shall not apply to the extent that a contribution to the Marine Recovery Fund has been elected in substitution for the onshore compensation measure and/or the offshore compensation measure for the purposes of paragraph 1(i) of this Part of this Schedule.
 3. The undertaker must construct the artificial nesting structure as set out in the KCIMP approved by the Secretary of State.
 4. The undertaker must notify the Secretary of State of completion of construction of the artificial nesting structure as set out in the KCIMP.
 5. The artificial nesting structure must not be decommissioned without prior written approval of the Secretary of State in consultation with relevant statutory nature conservation body.
 6. The KCIMP approved under this Schedule includes any amendments that may subsequently be approved in writing by the Secretary of State. Any amendments to or variations of the approved KCIMP must be in accordance with the principles set out in the kittiwake compensation plan and may only be approved where it has been demonstrated to the satisfaction of the Secretary of State that it is unlikely to give rise to any materially new or materially different environmental effects from those considered in the kittiwake compensation plan.

Part 3

CONTRIBUTION TO MARINE RECOVERY FUND

1. No turbine forming part of the authorised development may begin operation until the undertaker has paid the sum of £500,000 (five hundred thousand pounds) to the Marine Recovery Fund.

PART 4

FISH HABITAT ENHANCEMENT

1. No turbine forming part of the authorised development may begin operation until arrangements for the implementation of fish habitat enhancement measures have been put in place in accordance with the principles set out in the KCIMP, the GCIMP and the GRCIMP.

PART 5

GANNET COMPENSATION

1. Following consultation with the H4 OoEG, the GCIMP must be submitted to the Secretary of State for approval in consultation with the MMO and relevant statutory nature conservation body for the offshore compensation measure(s) (if required), and with the relevant local planning authority and relevant statutory nature conservation body for the onshore compensation measure (if required). The GCIMP must be based on the strategy for gannet compensation set out in the gannet compensation plan and must include:
 - a. for the artificial nesting structure measure:
 - i. details of the location where compensation measure will be delivered, and in the event an onshore structure is required, details of landowner agreement(s) and in the event an offshore structure is required, details of any relevant seabed agreement(s);
 - ii. details of the design of the artificial nesting structure; including the projected number of nests that will be accommodated on the structure, and how risks from avian or mammalian predation and for an onshore nesting structure how unauthorised human access will be mitigated;
 - iii. an implementation timetable for delivery of the artificial nesting structure, such timetable to ensure that the structure is in place to allow for at least three full gannet breeding seasons prior to operation of any turbine forming part of the authorised development. For the purposes of this paragraph each breeding season is assumed to have commenced on 1st April in each year and ended on 31st August
 - iv. details of the maintenance schedule for the artificial nesting structure;
 - v. details for the proposed ongoing monitoring of the measure including
 - vi. 1. survey methods;
 - vii. 2. survey programmes; and
 - viii. 3. colony and productivity counts;
 - ix. recording of H4 OoEG consultations;
 - x. details of any adaptive management measures, with details of the factors used to trigger any such measures; and
 - xi. provision for reporting to the Secretary of State, to include details of the use of the structure by breeding gannet to identify barriers to success and target any adaptive management measures;

- xii. provision for the option to be exercised at the sole discretion of the undertaker to pay a contribution (in addition to the sum stipulated in Part 3 of this Schedule) to the Marine Recovery Fund wholly or partly in substitution for the onshore and/or offshore artificial nesting structures or as an adaptive management measure for the purposes of paragraph 1.a.vii of this Part of this Schedule. The sum of the contribution to be agreed between the undertaker and Defra in consultation with OoEG and included in the GCIMP.
 - b. for the bycatch reduction measure:
 - i. details of relevant technology supply agreements and arrangements with fishers to use the bycatch reduction technology that will be or have been secured by the undertaker;
 - ii. an implementation timetable for provision of the bycatch reduction measure, such timetable to ensure that contract(s) are entered into with fishers for the provision and use of bycatch reduction technology no later than one year prior to the operation of any turbine forming part of the authorised development;
 - iii. details for the proposed ongoing monitoring of the measure including collection of data from participating fishers;
 - iv. recording of H4 OoEG consultations;
 - v. details of any adaptive management measures and details of the factors used to trigger any such measures; and
 - vi. provision for annual reporting to the Secretary of State, to identify barriers to success and target any adaptive management measures.
 - vii. provision for the option to be exercised at the sole discretion of the undertaker to pay a contribution (in addition to the sum stipulated in Part 3 of this Schedule) to the Marine Recovery Fund wholly or partly in substitution for the bycatch measures or as an adaptive management measure for the purposes of paragraph 1.b.v of this Part of this Schedule. The sum of the contribution to be agreed between the undertaker and Defra in consultation with OoEG and included in the GCIMP.
- 2. Paragraphs 3, 4 and 5 of this Part of this Schedule shall not apply to the extent that a contribution to the Marine Recovery Fund has been elected in substitution for the onshore compensation measure and/or the offshore compensation measure and/or the bycatch compensation measure for the purposes of paragraphs 1.a.ix and 1.b.vii of this Part of this Schedule.
- 3. The undertaker must construct the artificial nesting structure and enter into contract(s) with fishers for the provision and use of bycatch reduction technology as set out in the GCIMP approved by the Secretary of State.
- 4. The undertaker must notify the Secretary of State of completion of construction of the artificial nesting structure and the entering into contract(s) with fishers for the provision and use of bycatch reduction technology as set out in the GCIMP.
- 5. The artificial nesting structure must not be decommissioned without prior written approval of the Secretary of State in consultation with relevant statutory nature conservation body.
- 6. The GCIMP approved under this Schedule includes any amendments that may subsequently be approved in writing by the Secretary of State. Any amendments to or variations of the approved GCIMP must be in accordance with the principles set out in the gannet compensation plan and may only be approved where it has been demonstrated to the satisfaction of the Secretary of State that it is unlikely to give rise to any materially new or materially different environmental effects from those considered in the gannet compensation plan.

PART 6

GUILLEMOT AND RAZORBILL COMPENSATION

1. Following consultation with the H4 OoEG, the GRCIMP must be submitted to the Secretary of State for approval in consultation with the MMO and relevant statutory nature conservation body for the offshore compensation measure, and with the relevant statutory nature conservation body and the relevant local planning authority and relevant conservation trusts for the onshore compensation measure. The GRCIMP must be based on the strategy for guillemot and razorbill compensation set out in the guillemot and razorbill compensation plan and include:
 - a. for the predator eradication measure:
 - i. details of the location(s) where the compensation measure will be delivered;
 - ii. details of how any necessary access rights, licences and approvals have or will be obtained and any biosecurity measures will be or have been secured;
 - iii. an implementation timetable for delivery of the predator eradication measure, such timetable to ensure that the predator eradication method has commenced no later than two years prior to operation of any turbine forming part of the authorised development;
 - iv. details for the proposed ongoing monitoring of the measure including:
 - v. 1. survey methods;
 - vi. 2. survey programmes;
 - vii. 3. productivity rates;
 - viii. 4. breeding population; and
 - ix. 5. distribution of breeding birds;
 - x. recording of H4 OoEG consultations;
 - xi. details of any adaptive management measures, with details of the factors used to trigger any such measures; and
 - xii. provision for reporting to the Secretary of State, to include details of the use of the location(s) by breeding guillemot and razorbill to identify barriers to success and target any adaptive management measures.
 - xiii. provision for the option to be exercised at the sole discretion of the undertaker to pay a contribution (in addition to the sum stipulated in Part 3 of this Schedule) to the Marine Recovery Fund wholly or partly in substitution for the predator eradication measures or as an adaptive management measure for the purposes of paragraph 1.a.vi. of this Part of this Schedule] The sum of the contribution to be agreed between the undertaker and Defra in consultation with OoEG and included in the GRCIMP.
 - b. for the bycatch reduction measure:
 - i. details of relevant technology supply agreements and arrangements with fishers to use the bycatch reduction technology that will be or have been secured by the undertaker;
 - ii. an implementation timetable for provision of the bycatch reduction measure, such timetable to ensure that contract(s) are entered into with fishers for the provision and use of bycatch reduction technology no later than one year prior to the operation of any turbine forming part of the authorised development;

- iii. details for the proposed ongoing monitoring of the measure including collection of data from participating fishers;
 - iv. recording of H4 OoEG consultations;
 - v. details of any adaptive management measures and details of the factors used to trigger any such measures; and
 - vi. provision for annual reporting to the Secretary of State, to identify barriers to success and target the adaptive management measures.
 - vii. provision for the option to be exercised at the sole discretion of the undertaker to pay a contribution (in addition to the sum stipulated in Part 3 of this Schedule) to the Marine Recovery Fund wholly or partly in substitution for the bycatch eradication measures or as an adaptive management measure for the purposes of paragraph 1.b.vi of this Part of this Schedule] The sum of the contribution to be agreed between the undertaker and Defra in consultation with OoEG and included in the GRCIMP.
2. Paragraphs 3 and 4 of this Part of this Schedule shall not apply to the extent that a contribution to the Marine Recovery Fund has been elected in substitution for the predator eradication measure and/or the bycatch compensation measure for the purposes of paragraphs 1.a.viii and 1.b.vii of this Part of this Schedule.
3. The undertaker must carry out the predator eradication method and enter into contract(s) with fishers for the provision and use of bycatch reduction technology as set out in the GRCIMP approved by the Secretary of State.
4. The undertaker must notify the Secretary of State of completion of the predator eradication method and entering into contract(s) with fishers for the provision and use of bycatch reduction technology set out in the GRCIMP.
5. The GRCIMP approved under this Schedule includes any amendments that may subsequently be approved in writing by the Secretary of State. Any amendments to or variations of the approved GRCIMP must be in accordance with the principles set out in the guillemot and razorbill compensation plan and may only be approved where it has been demonstrated to the satisfaction of the Secretary of State that it is unlikely to give rise to any materially new or materially different environmental effects from those considered in the guillemot and razorbill compensation plan.

10 Funding

- 10.1.1.1 The Applicant has identified the costs associated with the implementation of the proposed compensation measure. These costs have been included within a detailed Derogation Funding Statement (**B2.10: Without Prejudice Derogation Funding Statement (APP-202)**). This statement is supplemental to the Funding Statement (**E1.1: Funding Statement (REP2-018)**) submitted as part of the suite of Application documents. The Funding Statement(s) outline the overall project cost based on the capital expenditure and operational expenditure assumptions in the "Review of Renewable Electricity Generation Cost and Technical Assumptions" (DECC 2016). The Funding Statement(s) also detail the corporate structure and a robust explanation to allow the SoS to conclude that the necessary funding to deliver the compensation measure can be secured.

11 Conclusion

- 11.1.1.1 The Applicant is confident that the compensation measure is viable, will be effective and can be delivered. The Applicant will continue stakeholder engagement to demonstrate the

design and implementation of the bycatch reduction project and ensure the compensation measure can be readily achieved and secured.

12 References

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