



BY E-MAIL

Secretary of State for Energy Security and Net
Zero
Energy and Infrastructure Planning
1 Victoria Street
London
SW1H 0ET

**For the Attention of:
Energy Infrastructure Planning Team**

13 February 2025

Dear Energy and Infrastructure Planning Team

**REGULATION 4 OF THE INFRASTRUCTURE PLANNING (CHANGES TO, AND
REVOCATION OF, DEVELOPMENT CONSENT ORDERS) REGULATIONS 2011**

**APPLICATION TO MAKE A NON-MATERIAL CHANGE TO THE HORNSEA FOUR
OFFSHORE WIND FARM ORDER 2023 (S.I. 2023/800) AS CORRECTED (S.I. 2024/117) AND
AMENDED (S.I. 2024/800)**

1. Introduction and Background

- 1.1 This application is made on behalf of Orsted Hornsea Project Four Limited ("**Orsted**") (company number 08584182) of registered office 5 Howick Place, London, England, SW1P 1WG and is for a second non-material change to the Hornsea Four Offshore Wind Farm Order 2023 (as amended).
- 1.2 Orsted is the undertaker with the benefit of the Hornsea Four Offshore Wind Farm Order 2023, which was granted by the Secretary of State for Energy Security and Net Zero (the "**Secretary of State**") on 12 July 2023 (S.I. 2023 No. 800) (the "**Original Order**") as corrected by the Hornsea Four Offshore Wind Farm (Correction) Order 2024 (S.I. 2024 No. 117) following an application made by Orsted.
- 1.3 The Original Order includes provision authorising the construction, operation, maintenance and decommissioning of the Hornsea Project Four offshore wind farm located approximately 69 kilometres from the East Riding of Yorkshire in the Southern North Sea, covering an area of approximately 470 square kilometres, together with associated offshore and onshore infrastructure and all associated development ("**Hornsea Four**"). Hornsea Four comprises the following key elements: up to 180 wind turbine generators; offshore transformer substations; offshore converter substations (High Voltage Direct Current system only); up to one offshore accommodation platform to house operations and maintenance staff; booster stations (High Voltage Alternating Current system only); subsea inter-array cables linking wind turbines to each other and to offshore substations; subsea interconnector cables linking the offshore substations to one another; subsea export cables to connect the wind farm to landfall; and cable protection.

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- 1.4 The Original Order required Orsted to construct an artificial nesting structure (“**ANS**”) for kittiwake, as a compensation measure for the potential impacts of Hornsea Four. Paragraph 3(d) of Part 2 of Schedule 16 of the Original Order requires the ANS to be in place at least four full breeding seasons before Hornsea Four becomes operational.
- 1.5 On 2 May 2024, Orsted made an application for a non-material change (“**NMC1**”) to the Original Order, the focus of which was to shorten the length of time the ANS need to be in place before operation, to allow time for the construction of the ANS without impacting the programme for the operation of Hornsea Four and its provision of renewable energy to the National Grid.
- 1.6 On 17 July 2024, the Secretary of State made the Hornsea Four Offshore Wind Farm (Amendment) Order 2024 (S.I. 2024 No. 800) (the “**Amended Order**”), granting NMC1 and reducing the time period the ANS need to be in place before operation of Hornsea Four.
- 1.7 Orsted now proposes a second non-material change (“**NMC2**”) to the Amended Order, relating to the guillemot compensation measures in Part 3 of Schedule 16 to the Amended Order, which are currently secured in the form of predator eradication and bycatch reduction. Currently, the Guillemot Compensation Implementation and Monitoring Plan (“**GCIMP**”) must be submitted and based on the strategy for guillemot compensation set out in the guillemot and razorbill compensation plan and must include, for the bycatch reduction measure, details of the arrangements with fishers to use bycatch reduction technology and associated provisions. Thereafter, Orsted must enter into the contracts with fishers for the bycatch reduction technology as set out in the approved GCIMP. Certain numbered works authorised by the Amended Order cannot commence until at least one year has lapsed after the contracts with fishers have been entered into.
- 1.8 Orsted proposes, via NMC2, to remove the requirements in Part 3 of Schedule 16 to the Amended Order relating to carrying out bycatch reduction through contracts with fishers, as described above. Principally, this is because, as supporting evidence demonstrates, the required guillemot compensation can be delivered via predator eradication only.
- 1.9 Orsted therefore intends to fulfil the compensation requirements for guillemot solely via the predator eradication measures, which will deliver at least 160% of the compensation requirement for guillemots, therefore comfortably meeting the requirements of Hornsea Four. Given the two measures of predator eradication and bycatch reduction were considered as a package of compensation in Orsted’s guillemot and razorbill compensation plan (an approach which was supported by the Secretary of State in the Habitats Regulation Assessment at pages 117 and 121), to be scaled up or scaled down as appropriate, Orsted proposes to “scale down” the bycatch reduction measure to zero. Orsted will keep the bycatch reduction measure as one of a range of adaptive management measures for future consideration, rather than as primary compensation.
- 1.10 Preliminary discussions on NMC2 have taken place between Orsted and Natural England (“**NE**”), with NE expressing in principle support for NMC2 at the most recent meeting of the Offshore Ornithological Engagement Group (“**OoEG**”) Steering Group held on 31 January 2025. The draft minutes from this meeting reflect that both NE and the Royal Society for the Protection of Birds (“**RSPB**”) *“support the bycatch measure being removed as a primary compensation measure”*, whilst the Marine Management Organisation (“**MMO**”) stated that they were *“also supportive of the NMC”*. In addition, NE stated in a letter to Orsted dated 14 November 2024 that given *“the, at best small, contribution that bycatch reduction would likely make to compensation delivery, we would not object to bycatch reduction only continuing in a reduced function, e.g, further trialling/research, or being removed from the package as a measure altogether. We recommend the feasibility of this in the context of the DCO requirements be explored with DESNZ”*.



- 1.11 The proposed changes would not require additional compulsory acquisition of land, nor would they have new or different effects on local residents or businesses or any additional implications in respect of habitats regulation assessment, particularly given that the two measures of predator eradication and bycatch reduction were always considered as a package of compensation, to be scaled up or scaled down as appropriate, as set out above. Orsted has produced a new Environmental and HRA report in support of this statement, the conclusions of which are summarised at paragraph 3.2 of the non-material change application at Appendix 1 of this letter and which is appended in full at Appendix 2.

2. **Supporting documentation**

- 2.1 Orsted is applying to the Secretary of State pursuant to section 153 and paragraph 2 of Schedule 6 to the Planning Act 2008 to make changes to the Order that are not material. This application is subject to the Infrastructure Planning (Changes to, and Revocation of, Development Consent Orders) Regulations 2011. As such, the following documents are included to support the application for a non-material change:

- (a) Non-material change application (included as the first Appendix to this letter);
- (b) Environmental and HRA report (Niras 2025) (included as the second Appendix to this letter);
- (c) Regulation 6 Notice;
- (d) Draft amendment Order (Word and PDF version); and
- (e) Email confirming successful validation of the draft amendment Order.

- 2.2 Please do contact [REDACTED]@pinsentmasons.com) should you have any further questions.

Yours sincerely

Pinsent Masons LLP
(This letter has been sent electronically and so is unsigned)



APPENDIX 1

NON-MATERIAL CHANGE APPLICATION REPORT

1. INTRODUCTION

- 1.1 Orsted Hornsea Project Four Limited ("**Orsted**") (company number 08584182) of registered office 5 Howick Place, London, England, SW1P 1WG is the undertaker with the benefit of the Hornsea Four Offshore Wind Farm Order 2023, which was granted by the Secretary of State for Energy Security and Net Zero (the "**Secretary of State**") on 12 July 2023 (S.I. 2023 No. 800) (the "**Original Order**") as corrected by the Hornsea Four Offshore Wind Farm (Correction) Order 2024 (S.I. 2024 No. 117) following an application made by Orsted.
- 1.2 The Original Order includes provision authorising the construction, operation, maintenance and decommissioning of the Hornsea Project Four offshore wind farm located approximately 69 kilometres from the East Riding of Yorkshire in the Southern North Sea, covering an area of approximately 470 square kilometres, together with associated offshore and onshore infrastructure and all associated development ("**Hornsea Four**"). Hornsea Four comprises the following key elements: up to 180 wind turbine generators; offshore transformer substations; offshore converter substations (High Voltage Direct Current system only); up to one offshore accommodation platform to house operations and maintenance staff; booster stations (High Voltage Alternating Current system only); subsea inter-array cables linking wind turbines to each other and to offshore substations; subsea interconnector cables linking the offshore substations to one another; subsea export cables to connect the wind farm to landfall; and cable protection.
- 1.3 The Original Order required Orsted to construct an artificial nesting structure ("**ANS**") for kittiwake, as a compensation measure for the potential impacts of Hornsea Four. Paragraph 3(d) of Part 2 of Schedule 16 of the Original Order requires the ANS to be in place at least four full breeding seasons before Hornsea Four becomes operational.
- 1.4 On 2 May 2024, Orsted made an application for a non-material change ("**NMC1**") to the Original Order, the focus of which was to shorten the length of time the ANS need to be in place before operation, to allow time for the construction of the ANS without impacting the programme for the operation of Hornsea Four and its provision of renewable energy to the National Grid.
- 1.5 On 17 July 2024, the Secretary of State made the Hornsea Four Offshore Wind Farm (Amendment) Order 2024 (S.I. 2024 No. 800) (the "**Amended Order**"), granting NMC1 and reducing the time period the ANS need to be in place before operation of Hornsea Four.
- 1.6 Orsted now proposes a second non-material change ("**NMC2**") to the Amended Order, relating to the guillemot compensation measures in Part 3 of Schedule 16 to the Amended Order, which are currently secured in the form of predator eradication and bycatch reduction. Currently, the Guillemot Compensation Implementation and Monitoring Plan ("**GCIMP**") must be submitted and based on the strategy for guillemot compensation set out in the guillemot and razorbill compensation plan and must include, for the bycatch reduction measure, details of the arrangements with fishers to use bycatch reduction technology and associated provisions. Thereafter, Orsted must enter into the contracts with fishers for the bycatch reduction technology as set out in the approved GCIMP. Certain numbered works authorised by the Amended Order cannot commence until at least one year has lapsed after the contracts with fishers have been entered into.



- 1.7 Orsted proposes, via NMC2, to remove the requirements in Part 3 of Schedule 16 to the Amended Order relating to carrying out bycatch reduction through contracts with fishers, as described above. Principally, this is because, as supporting evidence demonstrates, the required guillemot compensation can be delivered via predator eradication only.
- 1.8 Orsted therefore intends to fulfil the compensation requirements for guillemot solely via the predator eradication measures, which will deliver at least 160% of the compensation requirement for guillemots, therefore comfortably meeting the requirements of Hornsea Four. Given the two measures of predator eradication and bycatch reduction were considered as a package of compensation in Orsted's guillemot and razorbill compensation plan (an approach which was supported by the Secretary of State in the Habitats Regulation Assessment at pages 117, 121 and 123), to be scaled up or scaled down as appropriate, Orsted proposes to "scale down" the bycatch reduction measure to zero. Orsted will keep the bycatch reduction measure as one of a range of adaptive management measures for future consideration, rather than as primary compensation.
- 1.9 Preliminary discussions on NMC2 have taken place between Orsted and Natural England ("**NE**"), with NE expressing in principle support for NMC2 at the most recent meeting of the Offshore Ornithological Engagement Group ("**OOEG**") Steering Group held on 31 January 2025. The draft minutes from this meeting reflect that both NE and the Royal Society for the Protection of Birds ("**RSPB**") *"support the bycatch measure being removed as a primary compensation measure"*, whilst the Marine Management Organisation ("**MMO**") stated that they were *"also supportive of the NMC"*. In addition, NE stated in a letter to Orsted dated 14 November 2024 that given *"the, at best small, contribution that bycatch reduction would likely make to compensation delivery, we would not object to bycatch reduction only continuing in a reduced function, e.g, further trialling/research, or being removed from the package as a measure altogether. We recommend the feasibility of this in the context of the DCO requirements be explored with DESNZ"*.
- 1.10 The changes required comprise changes to paragraph 1 of Part 1 and paragraphs 10-12 of Part 3 of Schedule 16 to the Amended Order, as set out at section 3 below.
- 1.11 The proposed changes would not require additional compulsory acquisition of land, nor would they have new or different effects on local residents or businesses or any additional implications in respect of habitats regulation assessment, particularly given the two measures of predator eradication and bycatch reduction were always considered as a package of compensation, to be scaled up or scaled down as appropriate, as set out above.
- 1.12 Orsted hereby applies to the Secretary of State pursuant to section 153 and paragraph 2 of Schedule 6 of the 2008 Act to make changes to the Amended Order that are not material (referred to hereafter as the "**NMC Application**"). The NMC Application is subject to the Infrastructure Planning (Changes to, and Revocation of, Development Consent Orders) Regulations 2011, as amended (the "**2011 Regulations**"). This NMC Application has been prepared with reference to the Department of Communities and Local Government document 'Guidance on Changes to Development Consent Orders' (December 2015).
- 1.13 This document sets out the proposed non-material change to the Amended Order sought by Orsted and the rationale for doing so and details of the consultation process undertaken. It also sets out why the changes sought in the NMC Application will not result in any materially new or materially different environmental effects, given that the changes proposed are technical and would not result in any development beyond that already consented through the Amended Order, which has already been subject to Environmental Impact Assessment.



2. CONSULTATION PROCESS

Background

- 2.1 Under the 2011 Regulations, on making an NMC Application the applicant must notify and consult those persons specified in the Regulations, this being all those who were notified (in accordance with section 56 of the Planning Act 2008) when the application for the original development consent order was accepted by the Secretary of State, as well as any other person who may be directly affected by the changes proposed in the application.
- 2.2 Regulation 7(3) of the 2011 Regulations also provides that an applicant need not consult a person or authority specified in the Regulations if they have the written consent of the Secretary of State not to do so.
- 2.3 A letter of 14 January 2025 from Pinsent Masons to the Secretary of State requested written consent from the Secretary of State under regulation 7(3) of the 2011 Regulations that only those bodies consulted on NMC1 (with the exception of the Wildlife Trusts, given that they declined Orsted's invitation to discuss the proposals for NMC2 at the Hornsea Four OOEG meeting held on 25 October 2024), being the MMO, NE, the RSPB, The Crown Estate and the Joint Nature Conservation Committee (together, the **"Proposed Consultees"**) should be consulted on the NMC Application, in light of the Secretary of State's agreement to the Proposed Consultees for NMC1 in its letter dated 18 February 2024.
- 2.4 On 29 January 2025, the Secretary of State confirmed that the consultee list should include the Proposed Consultees, but that the Alderney Wildlife Trust (the **"Additional Consultee"**) should also be directly consulted on the NMC Application, given the nature of the proposed changes.
- 2.5 The Secretary of State agreed that all other parties need not be consulted as they are not directly affected by the NMC Application, either because the changes proposed will not affect their interests or because their interests relate to a different part of the scheme.
- 2.6 Accordingly, the Secretary of State gave written consent, under regulation 7(3) of the 2011 Regulations, that only the Proposed Consultees and the Additional Consultee (together, the **"Consultees"**) need be consulted on the NMC Application. No other parties who may be directly affected by the changes proposed in the NMC Application have been identified.

Overview

- 2.7 Regulations 6 and 7 of the 2011 Regulations set out the process for publicising and consulting respectively on an NMC Application. Pursuant to Regulation 7A of the 2011 Regulations, Orsted will submit a separate Consultation and Publicity Statement confirming its compliance with Regulations 6 and 7A of the 2011 Regulations.
- 2.8 In summary, the following has, or is being, undertaken by Orsted to comply with Regulations 6 and 7:
 - 2.8.1 Orsted is publicising the NMC Application by publishing a notice in each of the Yorkshire Post, the London Gazette, the Lloyd's List and the Fishing News for two successive weeks. The notice will be published for the first time on 13 February 2025 when the NMC Application is made to the Secretary of State. A copy of the notices will be included in the Consultation and Publicity Statement;



- 2.8.2 the project email address HornseaProjectFour@planninginspectorate.gov.uk has been included in the notice publicising the NMC Application so that members of the public can make a formal response to PINS in relation to the NMC Application; and
- 2.8.3 following receipt of notice from the Secretary of State pursuant to Regulation 7(3) on 29 January 2025, the list of consultees contacted regarding the NMC Application will be the Consultees defined above.
- 2.9 The NMC Application will be available to view on the project website at:
<https://hornseaprojects.co.uk/hornsea-project-four/documents-library>
and also on PINS' website at:
<https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010098/documents>
- 2.10 Hard copies of the NMC Application can be requested by contacting Orsted at HornseaProjectFour@orsted.com or on: +447787695045. Each hard copy is available at the cost of £20 per copy.
- 2.11 Consultees are invited to provide comments on the NMC Application until the closing date for consultation which is no less than 28 days following the date when the notice is last published.
3. **PROPOSED NON-MATERIAL CHANGE TO THE ORDER**
- 3.1 The Amended Order consists of 49 articles and 16 Schedules. This NMC Application proposes changes only to paragraph 1 of Part 1 and paragraphs 10-12 of Part 3 of Schedule 16. The content of these changes is set out in the table below.

Table 1 - Proposed changes to the Amended Order

Article of the Amended Order	Proposed change
Schedule 16, Part 1, paragraph 1	Amend the existing definition of “the offshore compensation measures” in paragraph 1 of Part 1 of Schedule 16 to the Amended Order as follows: ““the offshore compensation measures” means, as the context requires, bycatch reduction and/or the offshore nesting structure;”
Schedule 16, Part 3, paragraph 10	Amend the existing paragraph 10 of Part 3 of Schedule 16 to the Amended Order as follows: “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 SNCB for the offshore compensation measure, and with Natural England, the local planning authority and Alderney Wildlife Trust for the onshore compensation measure. The GCIMP must be based on the strategy for guillemot compensation set out in the guillemot and razorbill compensation plan (as relevant to guillemot) and include:”
Schedule 16, Part 3, paragraph 10(b)	Delete the existing paragraph 10(b) of Part 3 of Schedule 16 to the Amended Order.



Schedule 16, Part 3, paragraph 11	<p>Amend the existing paragraph 11 of Part 3 of Schedule 16 to the Amended Order as follows:</p> <p>“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 GCIMP approved by the Secretary of State in consultation with Natural England, the Alderney Wildlife Trust and the local planning authority for the onshore measures and the relevant SNCB and MMO for the offshore measures. Work No. 1(a) and 1(b), Work No. 2(a), 2(b) and (c) and Work No. 3(a) must not commence until the GCIMP has been approved by the Secretary of State in accordance with paragraph 10, and at least 2 years have elapsed since the start of the predator eradication works and at least one year after the contract(s) with fishers for the provision and use of bycatch reduction technology have been entered into.”</p>
Schedule 16, Part 3, paragraph 12	<p>Amend the existing paragraph 12 of Part 3 of Schedule 16 to the Amended Order as follows:</p> <p>“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 GCIMP.”</p>

3.2 Orsted has produced a new Environmental and HRA report, which is appended in full at Appendix 2, in order to confirm that the outcomes considered in the Secretary of State's Habitats Regulation Assessment (“HRA”), when granting the Original Order, are not changed in a material manner. In summary, the conclusions of this report are as follows:

- 3.2.1 the predator eradication measure has the ability to deliver more than the required compensation amount, with confidence from previous eradication examples, even without the bycatch reduction compensation measure;
- 3.2.2 the scale of delivery provides confidence that the removal of brown rats at locations proposed by Hornsea Four across the Bailiwick of Guernsey will provide the required habitat needed for guillemot to recover;
- 3.2.3 there is no mechanism whereby the removal of the bycatch reduction compensation measure could alter any of the conclusions of the offshore ornithology section of Orsted's Environmental Impact Assessment for offshore and intertidal ornithology; and
- 3.2.4 the removal of the bycatch reduction compensation measure from the compensation measure package does not affect the overall ecological validity of the compensation measure, does not have the potential to alter the conclusions of the Secretary of State's HRA, and will not conflict with the objective of compensation as set out by the Secretary of State in the HRA in the delivery of 452.3 adult guillemot per year.

4. SUMMARY AND CONCLUSIONS

- 4.1 Orsted is proposing to change the Amended Order to remove the requirements in Part 3 of Schedule 16 to the Amended Order relating to carrying out bycatch reduction through contracts with fishers, because evidence shows that the required guillemot compensation can be delivered via predator eradication only.



- 4.2 No change to the other provisions in the Amended Order, physical development or other controls regulating the construction, operation, maintenance or decommissioning of the authorised development are proposed.
- 4.3 The proposed changes would not require additional compulsory acquisition of land, nor would they have new or different effects on local residents or businesses or any additional implications in respect of habitats regulation assessment, particularly given that the two measures of predator eradication and bycatch reduction were always considered as a package of compensation, to be scaled up or scaled down as appropriate, as set out above.
- 4.4 Given the information presented in this document, as summarised above, it is considered that the proposed changes are non-material changes for the purposes of the 2011 Regulations. Accordingly, Orsted submits that the proposed changes as outlined in section 3 of this document can be granted consent by the Secretary of State as non-material changes.



APPENDIX 2
ENVIRONMENTAL AND HRA REPORT

HOW04

Hornsea Four Environmental and HRA Report in support of application for a non-material change to the Hornsea Project Four Development Consent Order Orsted

Date: 4th February 2025

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1 Introduction

A Development Consent Order (DCO) was awarded to Orsted Hornsea Project Four Limited (company number 08584182) (hereafter referred to as "Orsted H4") on 12 July 2023 authorising the construction and operation of the Hornsea Project Four Offshore Wind Farm (hereafter referred to as "Hornsea Four"). The Hornsea Four Offshore Wind Farm Order 2023 is hereafter referred to as "the DCO". As part of the DCO, Orsted H4 is required to compensate for predicted mortality from displacement of adult common guillemot (*Uria aalge*) (hereafter referred to as "guillemot") associated with the Flamborough and Filey Coast Special Protection Area (FFC SPA) due to the presence of the operational turbines of Hornsea Four.

This note is provided in support of the non-material change (NMC) to the Hornsea Four DCO. This pertains to changes in relation to the removal of the bycatch reduction compensation measure for guillemot. These changes reflect the proposed reliance on the significant overdelivery of the predator eradication measure as the delivery mechanism for Hornsea Four's compensation.

2 Background

Hornsea Four's impact assessment concluded that there was no Adverse Effect on Integrity (AEoI) for guillemot from the wind farm alone or in-combination with other projects. Using a precautionary approach, the Examining Authority (ExA) agreed there was no AEoI for Hornsea Four alone but could not exclude AEoI for combined impacts. They recommended compensating for 452.3 annual guillemot mortalities versus Hornsea Four's estimate of 39.5. The Secretary of State concurred with the ExA that compensation is required for 452.3 adult guillemot annually.

Orsted H4 are currently producing a detailed Guillemot Compensation Implementation and Monitoring Plan (GCIMP) for Hornsea Four to fulfil the requirements of paragraph 10 of Part 3 of Schedule 16 of the DCO. The GCIMP must be based on the strategy set out in the Guillemot and Razorbill Compensation Plan (GCP) (B2.8: FFC SPA: Guillemot and Razorbill Compensation Plan (REP7-027)) (as relevant to guillemot).

Within the GCP, two compensation measures were presented together as a package for guillemot:

- A non-native invasive mammalian predator eradication project designed to support sufficient breeding pairs of guillemot to offset the potential predicted impacts from Hornsea Four on this feature (the predator eradication measure); and
- Fisheries bycatch reduction project to reduce guillemot mortality (the bycatch reduction measure).

The following sections of this note provide supporting information pertinent to the ecological aspects of the compensation measures, assuring confidence that predator eradication can serve as the sole primary compensation measure for the Project. It also addresses the outcomes of the Habitat Regulations Appraisal (HRA) for Hornsea Four and confirms that they are not changed in a material manner.

3 Guillemot Bycatch Reduction Measure

Gillnet fisheries have been identified as a threat to guillemot populations. The bycatch reduction compensation measure for guillemot is detailed within the GCP and aims to reduce bycatch of guillemot in UK gillnet fisheries (B2.8.1 Compensation measures for FFC SPA: Bycatch Reduction: Ecological Evidence (APP-194)). The compensation measure involves the implementation of guillemot bycatch reduction technologies in fisheries with high guillemot bycatch rates. The selection of appropriate fisheries was based on spatial and temporal bycatch risk mapping, which identified areas with high seabird density and fishing effort. The south and southwest coasts of England were highlighted as areas for implementation due to their assumed high bycatch rates during the guillemot non-breeding season. Further information and evidence supporting this compensation measure is available within the Hornsea Four application documents, specifically the Ecological Evidence Report (B2.8.1 Compensation measures for FFC SPA: Bycatch Reduction: Ecological Evidence (APP-194)) and the GCP (B2.8: FFC SPA: Guillemot and Razorbill Compensation Plan (REP7-027)).

The bycatch technology selection phase tested the Looming Eyes Buoy (LEB), an above-water deterrent designed to reduce seabird bycatch by exploiting the birds' natural avoidance behaviour. The selection phase provided confidence in the measure, scale, and locations, as set out within the Bycatch Roadmap (B2.8.2 Compensation measures for FFC SPA: Bycatch Reduction: Roadmap (REP7-029)). Within the GCP, Orsted H4 estimated the requirement of the provision of bycatch reduction measures on 8 vessels. This was based upon the first year of the bycatch technology selection phase and upon Hornsea Four's evidence-based impact assessment within

their Report to Inform the Appropriate Assessment (RIAA) of 39.50 adult guillemot (with further information presented below).

At the end of the first year, Orsted H4 committed to a further year of at-sea testing, using a greater number of vessels. The two years of the technology selection phase were from November 2021 to March 2022 (Year 1) and September 2022 to March 2023 (Year 2). Both years involved paired net trials with control nets (no LEB) and experimental nets (with the LEB) across two regions in England: the south coast and the southwest coast. The study observed a reduction in guillemot bycatch over the two years when the LEB was used.

The scale of the benefit (number of guillemot saved) through use of the LEB was estimated, noting that the actual benefit is dependent on the number of vessels (and subsequently hauls) that use the LEB in their fishing practice. The outcomes from this phase provide confidence in the scalability and effectiveness of the LEB as a compensatory measure. However, they also acknowledge other external factors influencing bycatch, such as bird density, which limit the overall benefit of the LEB.

Despite the LEB being evidenced as an effective technique for reducing guillemot bycatch, the overall contribution of the bycatch reduction compensation measure was estimated to be small relative to the overall compensation requirement for Hornsea Four within the DCO. It is noted that the bycatch reduction measure was proposed by Orsted H4 in the context of its estimated mortality of 39.5 adult guillemot annually; the Secretary of State's AA subsequently concluded an estimated mortality of 452.3 adult guillemot annually. If the GCP's assumption of 8 vessels is used alongside the results presented above, the deployment of the LEB would only result in a 3% contribution towards the compensation total for an impact of 452.3. This contribution is significantly reduced compared to the 31% contribution for an impact of 39.5 (the original estimated mortality proposed by Orsted H4).

In contrast, it is noted that the predator eradication measure can deliver an anticipated minimum 164% contribution towards the Hornsea Four compensation requirement for guillemot, as explained in the following sections.

Therefore, Orsted H4 proposes to reduce the anticipated contribution of the bycatch compensation measure to zero for the purposes of implementation (and therefore to remove its inclusion as a primary compensation measure within the GCIMP). Orsted H4 proposes to instead rely on the significant overdelivery of the predator eradication compensation measure (which is demonstrated in the following sections). The bycatch reduction compensation measure for guillemot will be retained as an adaptive management measure, to be implemented if required based on predator eradication measure monitoring outcomes. After the eradication measure has been implemented and monitored for sufficient time to inform decision-making (with such details being included within the GCIMP), further ongoing bycatch studies similar to Orsted H4's technology selection phase will be taken into consideration if bycatch reduction is required as an adaptive management measure.

4 Predator Eradication

Guillemot have a number of natural predators distributed across their range. Natural predators generally pose a low risk to breeding seabirds as they have co-evolved with predation pressure and have mechanisms or behaviours to avoid or withstand it, such as nesting on remote islands which are free from ground dwelling predators.

However, when non-native predators such as black and brown rats (*Rattus rattus* and *Rattus norvegicus*) are introduced to these island colonies, they can have profound impacts on the native fauna (Jones *et al.* 2016;

Thomas *et al.* 2017). Rats influence guillemot colonies by predating eggs, chicks, and adults; this leads to changes in guillemot breeding colony distribution and nesting habitat. Multiple eradication examples are presented within the Predator Eradication Evidence Report (B2.8.3 Compensation measures for FFC SPA: Predator Eradication: Ecological Evidence (APP-196)) and summarised within the GCP. These examples clearly demonstrate that rats of either species can have a profound negative population level effect where their ranges overlap with breeding seabirds, including guillemot, and they are able to access nesting locations. There is strong evidence that non-native invasive mammalian predator eradication programmes (referred to as 'predator eradication programmes' hereafter) increase guillemot breeding success, with one recent example being the eradication of black rats from Lundy (UK). There is therefore very high confidence in this compensation measure.

To compensate for the potential displacement impacts on guillemot, Orsted H4 proposes to implement a predator eradication programme in accordance with the DCO at identified islands within the Herm and Sark archipelagos (part of the Bailiwick of Guernsey, Channel Islands). Adaptive management options are being explored on islands and islets within the Alderney Island complex.

The selected locations have been identified based on ecological evidence and thorough feasibility studies supporting a predator eradication programme for guillemot, including evidence relating to the location's delivery potential and connectivity to the biogeographic region (and specifically the UK National Site Network (UK NSN)).

The implementation of a predator eradication programme will provide rat-free nesting space. This will accommodate additional breeding pairs of guillemot to subsequently offset the predicted impacts from the operation of Hornsea Four on the UK NSN. This aligns with the proposed approach set out within the GCP and consequently the relevant DCO requirements set out by the Secretary of State.

A detailed account of the evidence supporting the measure, location determination, and other key aspects relevant to this measure can be found within the Predator Eradication Evidence Report (B2.8.3 Compensation measures for FFC SPA: Predator Eradication: Ecological Evidence (APP-196)). Information on how the measure will be implemented is presented within the GCP and the Predator Eradication Roadmap (Revision 5 of B2.8.4 Compensation measures for FFC SPA: Predator Eradication: Roadmap (updated at Deadline 7)).

5 Scale and Capacity of Compensation

The DCO requirement for guillemot compensation specified creating nest sites in the Herm Island complex and around Alderney when stating that the GCIMP must include for the predator eradication measure:

"details of the number of nest sites that need to be created within the Herm Island complex (Herm, Jethou, including Grand Fauconniere and the Humps) and locations around Alderney."

The paragraph (Para. 10(a)(ii) of Part 3 of Schedule 16) of the DCO continues, stating:

"This must take into account both the number of chicks that will need to be produced to ensure that the required number of adults survive to adulthood..."

The first stage was to therefore determine the amount of nesting space required to offset the impact (452.3), and then to understand the total capacity of the locations being considered for the predator eradication programme.

Orsted H4 provided a report at Deadline 1 (Hornsea Project Four: G1.41 Calculation Methods of Hornsea Four's Proposed Compensation Measures for Features of the FFC SPA) detailing compensation calculations to convert a predicted impact from Hornsea Four of 37 (36.6) breeding adults into nest sites. This was agreed as an appropriate method by stakeholders (via the extensive consultation process with the Offshore Ornithology Engagement Group (OOEG)). It concluded that approximately 162 additional rat-free nesting spaces were needed to offset 36.6 guillemot per year (noting that the predicted impact of 36.6 was updated to 39.5 with the Hornsea Four RIAA). Following the Secretary of State determination of a predicted impact of 452.3 breeding adult guillemot per year, Hornsea Four used the same agreed method of calculation to determine the required scale of compensation based on Secretary of State's AA conclusion. This process identified 1,999 (1,998.9) nesting spaces would be required to support the number of breeding pairs of guillemot to compensate for an impact of 452.3 breeding adults.

Continuation of the above cited Paragraph 10(a)(ii) of Part 3 of Schedule 16 of the DCO also requires that the foregoing calculation takes account of the *"...the proportion of adult birds that are expected to be recruited into the UK NSN"*.

Addressing this requirement involved an additional calculation considering the species' philopatry. Adult guillemot have high breeding philopatry: once they first begin breeding, they repeatedly return to the same nesting site each year (Harris *et al.* 1996; Halley *et al.* 1995). They also display a relatively high degree of natal philopatry, with a proportion of birds returning to the colony in which they originated for their first breeding season (42% Harris *et al.* 1996; 58% Halley *et al.* 1995). However, Harris *et al.* (1996) stated that the recorded natal philopatry was most likely an overestimation due to dispersed individuals being less likely to be resighted. For Hornsea Four's compensation planning, the more conservative rate of 58% natal philopatry has been used (Halley *et al.* 1995), with the assumption that the remaining 42% of birds produced by the compensation will disperse into the UK NSN and associated guillemot colonies supporting the UK NSN.

This additional factor equates to 4,760 nesting spaces in total to be provided at identified locations within the Bailiwick of Guernsey, which accounts for adequate dispersal of 452.3 into the UK NSN and associated guillemot colonies supporting the UK NSN. The below sections describe how the locations covered by the eradication proposals provide more than the required 4,760 nesting spaces.

5.1 Total Capacity of Location

At examination, a suite of potential eradication locations was presented within the GCP (and associated documents) for feasibility purposes, based on much lower and precautionary breeding densities. Following the examination phase, Orsted H4 committed to feasibility studies to determine suitable locations for rat eradication across the Bailiwick of Guernsey. Experts recommended the Herm Island complex for large-scale eradication due to ecological suitability and stakeholder support, with additional sites in Sark and Alderney considered for over-compensation and adaptive management. Site visits enabled a site-based, and therefore more realistic, breeding density to be used to inform the approach. These locations and site-based breeding densities of existing colonies were consulted upon via the OOEG and agreed as suitable for inclusion in the compensation measure. Orsted H4 decided to continue with delivery across all feasible locations to maximise the chances of the predator eradication compensation measure being successful and to increase benefits to guillemot above the required level.

Orsted H4 commissioned Habitat Assessment & Restoration (Ltd) (eradication specialists) and NIRAS (compensation and ornithology specialists) to document habitat suitable for guillemot breeding following the removal of rats. Refined locations which will be included within the final location delivery package for Hornsea Four (and stated within the GCIMP) include the Herm Island complex and L'Etac (within the Sark Island complex), which

were surveyed for nesting preferences. Estimates of potential nesting habitat were consistent with previous assessments, considering factors like ledge dimensions and current breeding density. Estimated occupancy of the breeding space made available through predator eradication was based upon a precautionary breeding density of 27 pairs of guillemot per m² based on observed densities during surveys in May 2022. However, much higher densities, such as 46 pairs/m² (Harris and Wanless, 1987) and 70 pairs/m² (Birkhead, 2010) have been reported in the UK.

Final estimates (based on a lower range of 27 pairs/m² and a higher range of 46 pairs/m²) indicate that, post eradication, the Herm Island complex could provide 4,971 to 8,469 additional nesting sites, and L'Etac 2,835 to 4,830 additional nesting sites.

6 Implications on HRA Conclusions

The main factor considered by the Secretary of State in their conclusion was the number of guillemots that Hornsea Four must compensate for, which is 452.3 birds per year.

The process outlined within the preceding sections of this report (and in coherence with the GCP) demonstrates the ability for the predator eradication measure to deliver above the required compensation amount, with confidence from previous eradication examples. Following methods which have been consulted on extensively, the lower range estimates predict the Herm Island complex alone has capacity to meet 104% of the required compensation (4,760 nesting spaces which provides over 452.3 adult guillemot per annum). With the inclusion of L'Etac, this raises the total to 164% of the compensation required for Hornsea Four. Based on the higher range estimates, the Herm Island complex has the potential to deliver 178% of the required compensation, with the inclusion of L'Etac bringing the total to 279% of the compensation required for Hornsea Four.

Significant population growth (such as that documented at Lundy, England) has been demonstrated for guillemot as a result of rat eradications. Following predator eradication, projecting the growth rate of a breeding guillemot population is challenging, as data on colonisation of newly available rat-free breeding spaces is limited. It is unknown how a response to the eradication will be shown in the population growth trajectory, such as exponential or linear growth. However, the scale of delivery provides confidence that the removal of rats at locations proposed by Hornsea Four across the Bailiwick of Guernsey will provide the required habitat needed for this species to recover.

While the bycatch reduction measure is mentioned within the Secretary of State's HRA as part of the compensation package for guillemot, this is stated '*in accordance with the principles set out in the Guillemot and Razorbill Compensation Plan*' (i.e. the GCP). The GCP notes that the bycatch reduction and predator eradication measures are flexible and scalable. This has been demonstrated by both lower and higher estimates of the predator eradication measure, providing significant overdelivery and potential for the population expansion of guillemot. This acts to provide a robust network of metapopulations throughout the range of the species. The robust suite of potential adaptive management measures proposed by the Hornsea Four Project (and detailed within the GCIMP) provides an additional 'safety net' to meet the compensation requirements for the Project, if required.

As a result, Orsted H4 is confident that the removal of the bycatch measure as a primary compensation package measure will not impact the conclusion of the Secretary of State's HRA. The proposed change does not affect the overall ecological validity of the compensation measure, does not have the potential to alter the conclusions of the HRA, and will not conflict with the objective of compensation as set out by the Secretary of State in the HRA in the delivery of 452.3 adult guillemot per year.

7 Implications on the Conclusions of the Offshore Ornithology Section of the EIA

Hornsea Four's Environmental Impact Assessment (EIA) for offshore and intertidal ornithology concluded, with respect to potential impacts on guillemot, that during construction and operational phases of the windfarm:

- Indirect effects, such as changes in habitat or abundance and distribution of prey, will be negligible;
- The impact from activities or wind turbine presence resulting in disturbance and displacement will be negligible; and
- The impact of attraction to lit structures by migrating birds in particular, which may cause disorientation, reduction in fitness, and possible mortality, will be negligible.

There is no mechanism whereby the removal of the bycatch reduction compensation measure could alter any of these conclusions. Therefore, the NMC will not affect the conclusions of the offshore ornithology section of the EIA.

8 Summary

The information provided within this note demonstrates the ability for the predator eradication compensation measure to be relied upon as the sole primary compensation measure for the Hornsea Four project. Final estimates (in coherence with the GCP) evidence the capacity for the predator eradication measure to deliver above the required compensation amount, with confidence from previous eradication examples. Adhering to methods which have been consulted on extensively, the lower range estimates predict the Herm Island complex alone has capacity to meet 104% of the required compensation (4,760 nesting spaces which provides over 452.3 adult guillemot per annum). With the inclusion of L'Etac, this raises the total to 164% of the compensation required for Hornsea Four. Based on the higher range estimates, the Herm Island complex has the potential to deliver 178% of the required compensation, with the inclusion of L'Etac bringing the total to 279% of the compensation required for Hornsea Four. This results in a significant level of overdelivery, increasing overall anticipated benefits to guillemot and therefore success of the measure.

In consequence, this supports the proposal to reduce the anticipated contribution of the bycatch compensation measure to zero for the purposes of implementation (and therefore removing its inclusion as a primary compensation measure within the GCIMP) and to instead rely on the significant overdelivery of the predator eradication compensation measure. The bycatch reduction compensation measure for guillemot will be retained as an adaptive management measure, should it be required, based on the outcomes from monitoring of the predator eradication measure.

Orsted H4 is therefore confident that their approach will deliver the required compensation returns via the predator eradication compensation measure alone and will not impact the Secretary of State's HRA. The change will not affect the ecological validity of the compensation measure or the objective of compensating for 452.3 adult guillemots per year.

9 References

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