DBS Offshore Wind

RWE Renewables UK Dogger Bank South (West) Limited

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Dogger Bank South Offshore Wind Farms

Reduction in Kittiwake Breeding Seasons Prior to Artificial Nesting Structure Installation

Document Date:	February 2025
Application Reference:	12.6
Revision Number:	01
Classification:	Unrestricted

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Company:	**RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited**	Asset:	**Development**
Project:	**Dogger Bank South Offshore Wind Farms**	Sub Project/Package	**Consents**
Document Title or Description:	Reduction in Kittiwake Breeding Seasons Prior to Artificial Nesting Structure Installation		
Document Number:	005648327-01	Contractor Reference Number:	C01516_RWE_REP_D0483_Rev01

Rev No.	Date	Status/Reason for Issue	Author	Checked by	Approved by
01	14/02/24	Deadline 2 – clarification on reduction in breeding seasons ahead of ANS installation	CEA	RWE	RWE

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Glossary

Term	Definition
Concurrent Scenario	A potential construction scenario for the Projects where DBS East and DBS West are both constructed at the same time.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Development Scenario	Description of how the DBS East and / or DBS West Projects would be constructed either in isolation, sequentially or concurrently.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Habitats Regulations Assessment (HRA)	The process that determines whether or not a plan or project may have an adverse effect on the integrity of a European Site or European Offshore Marine Site.
Statutory Nature Conservation Bodies	Comprised of JNCC, Natural Resources Wales, Department of Agriculture, Environment and Rural Affairs/Northern Ireland Environment Agency, Natural England and Scottish Natural Heritage, these agencies provide advice in relation to nature conservation to government.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Wind Turbine	Power generating device that is driven by the kinetic energy of the wind.

Acronyms

Acronym	Definition
ANS	Artificial Nesting Structures
DBS	Dogger Bank South
DCO	Development Consent Order
HRA	Habitats Regulations Assessment
FFC	Flamborough and Filey Coast
FID	Final Investment Decision
KSCP	Kittiwake Strategic Compensation Plan
ODOW	Outer Dowsing Offshore Wind
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area

1 Introduction

1. The Dogger Bank South (DBS) Offshore Wind Farms ('the Projects') have proposed the installation of offshore artificial nesting structures (ANS) as compensation for predicted kittiwake mortality for birds associated with the Flamborough and Filey Coast (FFC) Special Protection Area (SPA).
2. At the point of Development Consent Order (DCO) submission in June 2024, the expectation from historic precedent and The Crown Estate's **Plan Level Habitats Regulations Assessment (HRA) Round 4 Kittiwake Strategic Compensation Plan [APP-060]** (KSCP) was that ANS should be in place three to four full breeding seasons before an offshore wind farm is operational. This is to allow sufficient time for the recruitment of juveniles to the adult population given that kittiwake are known to start breeding on average at four years old (Horswill and Robinson, 2015) although a proportion of kittiwakes (26.5%) breed for the first time at three years old (Coulson, 2011).
3. At the point of application, the Applicants committed to installing a project developed ANS three breeding seasons in advance of operation and delivering a collaborative ANS to be installed by another developer four years ahead of operation. This timing was based upon precedent for other offshore wind projects at the time. However, recent decisions to accept non-material changes for Hornsea 3 and Hornsea 4 offshore wind farms have reduced this time period to two years in advance of operation. Outer Dowsing Offshore Wind (ODOW) has followed the Hornsea projects approach and has submitted a change request to amend their DCO wording to reduce the number of breeding seasons ahead of operation from three to two. This change request was accepted into the examination process on 11th February 2025.
4. This report outlines the implications of the existing expectations in relation to timelines for ANS installation ahead of turbine operation and assesses the suitability and practicality of these.

2 Compensation Requirements

5. The compensation requirements for the Projects are provided in **Appendix 1 - Project-Level Kittiwake Compensation Plan (Revision 3) [AS-087]**. Table 4-1 of this document states that the worst-case annual mortality for the Projects would be between 104 (mean) and 377 (upper 95% confidence interval) individuals. Table 5-1 of the same document states the level of compensation required in terms of nesting pairs and compensation quantum as presented in the **KSCP [APP-060]**. The KSCP considers that between 2,500 and 5,500 nesting spaces are required to compensate for Round 4 projects concluding adverse effects on integrity for the FFC SPA kittiwake population (the Projects plus ODOW).

6. The Applicants, in collaboration with ODOW propose to deliver two offshore ANS via the following mechanisms:
   - A single ANS developed and installed by the Applicants.
   - A single ANS developed and installed by ODOW.

7. The Applicants and ODOW are exploring the potential for nesting space from each other's ANS to be shared between the parties to present reciprocal resilience across the compensation measure (a Memorandum of Understanding is currently being drafted between the two parties). This will enable both the Applicants and ODOW to deliver the strategic measure and approach in line with the **KSCP [APP-053]**, collaboratively through the installation of individual project-led ANS.

8. The Applicants will provide sufficient quantum of compensation for kittiwake in a single ANS which they will develop. However, it is noted that collaborative delivery is one of the mechanisms proposed in the **KSCP [APP-053]** therefore engagement with other OWF developers both through the kittiwake Steering Group and directly with other developers has been undertaken during the pre-application stage to explore opportunities for collaboration between the Applicants, ODOW and other OWF developers.

3 Reviewing Breeding Seasons Ahead of ANS Installation

9. Several factors have given the Applicants cause to re-examine timelines in regard to offshore ANS installation ahead of wind farm operation.

10. Colony formation on ANS will take time to reach the population level required to deliver compensation, this may mean that compensation targets are not met within the first few years following ANS construction. To reduce the accumulation of 'mortality debt' and the resultant lag between impact and compensation, installation of ANS four years prior to operation has been recommended by Statutory Nature Conservation Bodies (SNCBs) for previous compensation schemes based upon the age at which kittiwake breed for the first time.

11. As outlined in section 1, at the point of DCO application, the Applicants committed to installing a project developed ANS three breeding seasons in advance of operation and delivering a collaborative ANS to be installed by another developer four years ahead of operation.

12. In March 2024, Orsted's Hornsea Three Offshore Windfarm was granted a non-material change to reduce the amount of time that ANS were required to be in place from four to two full kittiwake breeding seasons for two of their proposed ANS, and from four to three breeding seasons for another two ANS (DESNZ, 2024a). Orsted were also granted a second non-material change in July 2024 for Hornsea Project Four to shorten the length of time their single offshore ANS needs to be in place before operation from at least four full breeding seasons to at least two full breeding seasons (DESNZ, 2024b). As well as providing evidence that ANS still deliver sufficient compensation over their life expectancy, the Hornsea cases have provided precedent for consent on the basis of installing two years in advance of operation.

13. ODOW has followed the Hornsea projects approach and has submitted a change request to amend their DCO wording to reduce the number of breeding seasons ahead of operation from three to two. This change request was accepted into the examination process on 11th February 2025.

14. In both of the Hornsea project cases, the provision of evidence relied upon the calculation of the growth rates of kittiwake colonies to demonstrate the point at which the new colony at the ANS would reach the accumulated mortality from the project. This was based upon a number of demographic factors:

- Initial colony size (either of 1 or 20);
- Initial colony growth rate – based on logistic growth rates; and
- Productivity.

15. The input values differ slightly between the two Hornsea projects however, the models remain similar, and methods for calculation of colony growth rates are transparent given that they are provided in a stepwise format within respective non-material change documentation (Orsted, 2024a; Orsted, 2024b). Following a review of references, the growth rate calculation methods are also considered to be ecologically appropriate for modelling colony growth on offshore ANS. In both cases, the Hornsea growth rate models demonstrate that the ANS will overcompensate for the collision mortality within the lifetime of the project. Additionally, in the wider context of kittiwake populations in the North Sea, the difference in when the break-even point occurs (when compensation exceeds impact) summed across years, for ANS installation four years prior to operation compared with two years is insignificant. The Hornsea cases demonstrate that if implementation of compensation is delayed, there will be an equivalent delay in achieving its goals.

16. The non-material changes were consented for both Hornsea projects on the basis of a provision of evidence on growth rates at the ANS. Given this outcome, and the challenging programming and commercial implications of installing an offshore ANS three or four breeding seasons ahead of operation, the Applicants have modelled their impact numbers provided in **Appendix 1 - Project-Level Kittiwake Compensation Plan (Revision 4) [AS-087]** to assess the ability of offshore ANS to provide sufficient compensation within the lifetime of the project should installation occur two years ahead of operation.

17. Given that calculations demonstrate there is little biological relevance to the four-year figure, and that installation four years prior to operation significantly impact the Projects programming and would require sizeable investment decisions to be made prior to the final investment decision (FID) for the Projects, the Applicants propose to reduce the number of breeding seasons prior to operation to two, to allow greater flexibility and reduce risk of delays and ensure that the Projects are contributing to UK Net Zero targets as soon as possible.

4 Application to the Projects

18. The Hornsea 4 colony growth rate calculation method was used as the most recently consented method, and due to ecological suitability of the approach on the basis of specialist input from Natural England on logistic growth rates. Full details are provided in Orsted (2024b). The outputs of the calculations demonstrate that if the Projects compensation is delayed, the primary outcome is a deferment in the success of the compensation by the same amount of time. Given that the colonies will grow from zero, even at high growth rates, it will take more than four years for the annual production to exceed annual mortality, and longer still to compensate the mortality debt.

19. Calculations indicate that offshore ANS would deliver the required compensation quantum within the project lifetime. Modelling the data using this method demonstrates that for a single structure and using all but the worst case productivity parameters, the ANS would take between 14 and 36 years for productivity to exceed accrued mortality (i.e. between 10 and 32 years following first DBS operation, assuming ANS in place four years prior to operation, see **Figure 4-1**).

20. The point at which productivity exceeds mortality is variable depending on the initial colony size, colony growth rate and productivity. Three productivity values (low, medium and high) are presented in **Figure 4-1**: 0.8, 1.025 and 1.38. Multiple values are presented as a basis to predict how quickly the proposed compensation for the Projects would achieve its aims under various scenarios.

21. Given a likely compensation ratio of 2:1 the compensation would be provided by the second structure within the same timescales. It follows that if ANS installation occurs two full years prior to operation, full compensation would be achieved between 16 and 36 years following first generation.

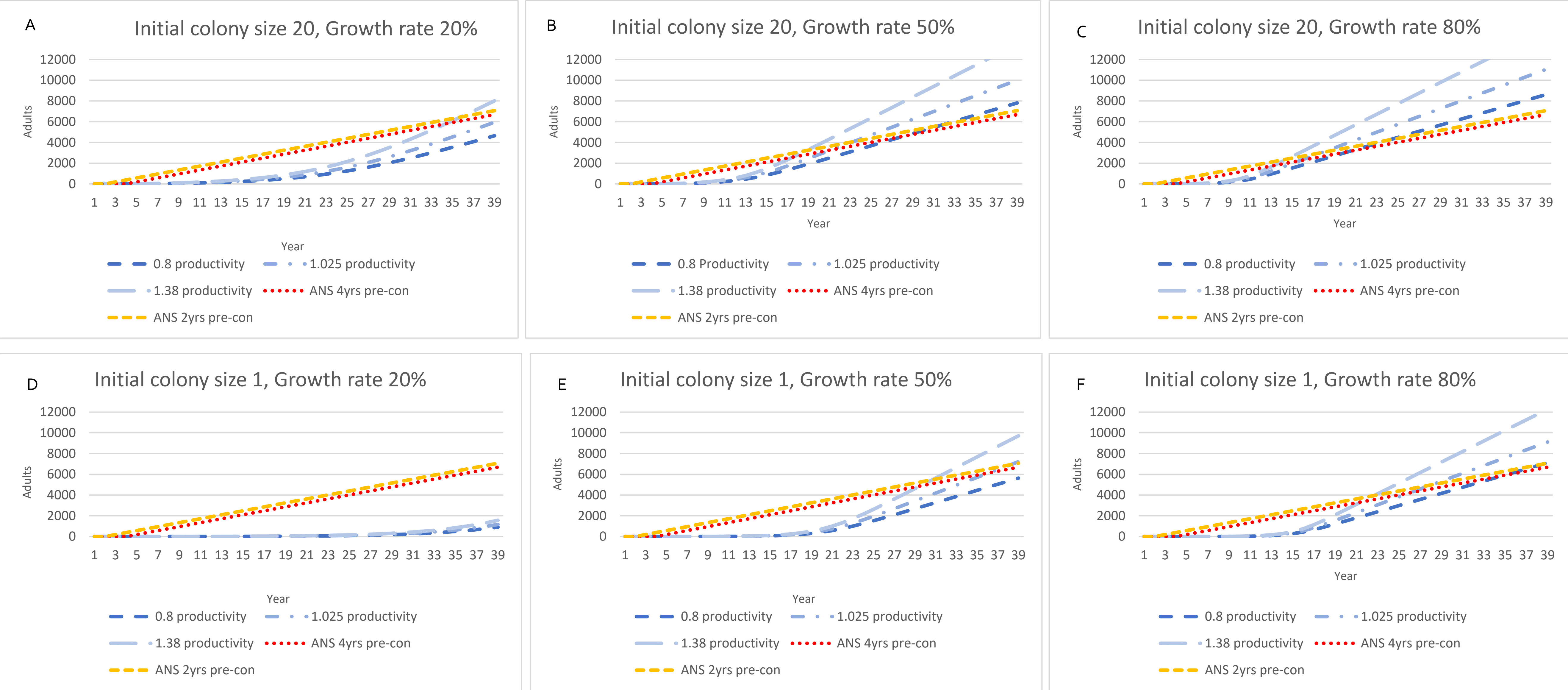
22. In addition, there are other considerations that would affect the timescales at which the ANS would be matching mortality with productivity and at which the overall accumulated mortality would be compensated for (assuming that the compensation functions as expected and there are no extreme events which affect productivity):

    - ODOW provide their project led ANS in 2025. This would mean that 50% of the compensation would be delivering earlier than the DBS alone ANS (assuming both ANS identical)
    - DBS becoming operational in phases under a concurrent scenario would mean that mortality would not reach the full worst-case numbers until construction is complete. The sequential development of either Dogger Bank South East, or West would result in a staggering of predicted impacts.

23. Given the long timescales required to compensate fully, early delivery of the ODOW ANS and DBS becoming operational in phases would not materially affect the point at which the ANS would be matching mortality with productivity and at which the overall accumulated mortality would be compensated for.

24. The graphs in **Figure 4-1** demonstrate that, even at low colonisation rates and low productivity, the ANS would adequately compensate the lifetime collision mortality of the Projects, in all but one scenario (Graph D). Under this scenario, the ANS would be unlikely to compensate for the lifetime collision mortality as calculated, whether the structure is installed either two, or four years in advance of wind farm operation.
25. Given that most scenarios show the measure adequately compensating, the Applicants are confident that a reduction in breeding seasons from four to two ahead of operation does not materially affect the delivery of the compensation requirement and furthermore, is necessary to ensure the security of the Projects.

Figure 4-1 Graphs illustrating ANS colonisation rates by kittiwake across a range of growth scenarios



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