



# Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Draft Statement of Common Ground: Natural England  
(Offshore Ornithology)

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## Glossary of Acronyms

BDMPS	Biologically Defined Minimum Population Size
CIA	Cumulative Impact Assessment
CRM	Collision Risk Modelling
DAS	Discretionary Advice Service
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
DEL	Dudgeon Extension Limited
DEP	Dudgeon Offshore Wind Farm Extension Project
DOW	Dudgeon Offshore Wind Farm
EA2/1N	East Anglia TWO/East Anglia ONE North
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
GBBG	Greater Black-Backed Gull
GW	Greater Wash
HAT	Highest Astronomical Tide
HDD	Horizontal Directional Drilling
HPAI	Highly Pathogenic Avian Influenza
HRA	Habitats Regulations Assessment
LBBG	Lesser Black-Backed Gull
OSP	Offshore Substation Platform
PEIR	Preliminary Environmental Information Report
PVA	Population Viability Analysis
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
RTD	Red-Throated Diver
SEL	Scira Extension Limited
SEP	Sheringham Offshore Wind Farm Extension Project
SNCB	Statutory Nature Conservation Body
SoCG	Statement of Common Ground

SoS	Secretary of State
SOW	Sheringham Shoal Offshore Wind Farm
SPA	Special Protection Area

## Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
The Applicant	Equinor New Energy Limited. As the owners of SEP and DEP, Scira Extension Limited and Dudgeon Extension Limited are the named undertakers that have the benefit of the DCO. References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

## 1 Introduction

### 1.1 Background

1. This draft Statement of Common Ground (SoCG) has been prepared by Equinor New Energy Limited (the Applicant) and Natural England. It identifies areas of the Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP) Development Consent Order (DCO) application (the Application) where matters are agreed or not agreed between the parties in relation to offshore ornithology. Separate SoCGs with Natural England have been prepared as follows:
  - **Draft Statement of Common Ground: Natural England (Offshore)** [document reference 14.7] submitted at Deadline 2;
  - **Draft Statement of Common Ground: Natural England (Onshore)** [REP1-046]; and
  - **Draft Statement of Common Ground: Natural England (HRA Derogation)** [REP1-047].
2. The Applicant has had regard to the Planning Act 2008: Guidance for the examination of applications for development consent (Department for Communities and Local Government, 2015) when compiling this draft SoCG.
3. The applicable matters considered within this SoCG apply to Natural England's statutory remit which is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.
4. Topic specific matters agreed, not agreed and matters that remain under discussion between the Applicant and Natural England are included within this draft SoCG. Matters that are not yet agreed will be the subject of ongoing discussion between the Applicant and Natural England to reach agreement on each matter wherever possible or refine the extent of disagreement between parties. The notes column of the draft SoCG tables provides commentary on these matters.
5. Throughout the draft SoCG the phrase "Agreed" identifies any point of agreement between the Applicant and Natural England. The phrase "Not Agreed" identifies any point that is not yet agreed between the Applicant and Natural England.
6. As the respective owners of SEP and DEP, Scira Extension Limited (SEL) and Dudgeon Extension Limited (DEL) are the named undertakers that have the benefit of the Development Consent Order (DCO). References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

### 1.2 Ongoing and Planned Offshore Ornithology Workstreams

7. The following documents have been submitted at Deadlines 1 and 2 to address outstanding offshore ornithology matters with Natural England:

- **Collision Risk Modelling (CRM) Updates (Environmental Impact Assessment (EIA) Context) Technical Note** [REP1-056]. This note provides biologically defined minimum population size (BDMPS) and CRM (including revised gannet macroavoidance parameters) updates; and
- **Apportioning and HRA Updates Technical Note (Revision B)** [document reference 13.3] which includes a Flamborough and Filey Coast (FFC) SPA Breeding Seabird Assemblage Assessment and red-throated diver (RTD) ‘effective area of displacement’ calculations from export cable laying vessel activity in the Greater Wash SPA; and
- **Auk Construction Phase Displacement Assessment (EIA Context) Technical Note** [document reference 14.28].

### 1.3 Consultation with Natural England

8. The Applicant has engaged with Natural England on the project during the pre-Application process, both in terms of informal non-statutory engagement and formal consultation carried out pursuant to Section 42 of the Planning Act 2008.
9. During Section 42 statutory consultation, Natural England provided comments on the Preliminary Environmental Information Report (PEIR) by way of a letter dated 10<sup>th</sup> of June 2021.
10. Further to the Section 42 consultation, several meetings were held with Natural England through the Evidence Plan Process (EPP). These are detailed throughout the SoCG and minutes of the meetings are provided as Appendices to the Consultation Report [APP-030].

### 1.4 Summary of ‘Agreed’, ‘Not Agreed’ and ‘In Discussion’ Matters

11. In order to easily identify whether a matter is ‘agreed’, ‘not agreed’ or ‘in discussion’, the colour coding system set out in **Table 1-1** has been used.
12. Details on specific matters that are ‘agreed’, ‘not agreed’ or ‘in discussion’ between the Applicant and Natural England are provided within the tables in **Section 2**.

*Table 1-1: Position status key*

Position Status	Position Colour Coding
<b>Agreed</b> The matter is considered to be agreed between the parties.	Agreed
<b>Not Agreed – no material impact</b> The matter is not agreed between the parties. However, while Natural England does not agree with the approach taken by the Applicant, Natural England does not consider this will result in material impact to the assessment conclusions. The matter is considered to be closed for the purposes of this SoCG.	Not Agreed – no material impact
<b>Not Agreed – material impact</b> The matter is not agreed between the parties. The outcome of the approach taken by the Applicant is considered to result in a	Not Agreed – material impact



Position Status	Position Colour Coding
materially different impact to the assessment conclusions. Discussions on these matters have concluded.	
<b>In discussion</b> The matter is neither 'agreed' nor 'not agreed' and is a matter where further discussion is required between the parties (e.g. where documents are yet to be shared with Natural England).	In discussion

## 2 Statement of Common Ground

13. A summary of the consultation undertaken to date with Natural England and the matters agreed or not agreed between the Applicant and Natural England with regard to offshore ornithology (based on discussions and information exchanged between the Applicant and Natural England during the pre-application, pre-examination and examination phases of the Application) are set out below.

### 2.1 Offshore Ornithology

14. SEP and DEP each have the potential to impact upon Offshore Ornithology. **Chapter 11 Offshore Ornithology** of the Environmental Statement (ES) [APP-097] provides an assessment of the significance of these impacts. The **Report to Inform Appropriate Assessment** [APP-059] provides an assessment of the potential effects of SEP and DEP on the Special Protection Areas (SPA) and their qualifying features which have been screened into the assessment.
15. **Table 2-1** provides an overview of consultation undertaken with Natural England regarding offshore ornithology. Further details on the Natural England engagement process for offshore ornithology can be found in ES **Chapter 11 Offshore Ornithology** [APP-097]. **Annex 1 Offshore Ornithology Agreement Log** is provide as an annex to this SoCG.

*Table 2-1: Summary of consultation with Natural England regarding offshore ornithology*

Date	Contact Type	Topic
<b>Pre-Application</b>		
24 <sup>th</sup> April 2019	Meeting	Preliminary meeting where an aerial survey programme update was provided. Sandwich tern tagging programme, HiDef flight height calculation and assessment methodologies were also discussed.
7 <sup>th</sup> October 2019	Report	Submission of the SEP and DEP Scoping Report. The Scoping Report outlined the existing environment, the impacts to be assessed in the ES, data gathering and key aspects of the assessment.  A Scoping Opinion was received on the 6 <sup>th</sup> of November 2019.
9 <sup>th</sup> January 2020	Meeting	Expert Topic Group (ETG) Meeting 1: agreement sought on baseline status, assessment methodology (including cumulative), mitigation measures and monitoring.
19 <sup>th</sup> May 2020	Method Statement	Assessment methodology method statement with the aim of guiding discussion and obtaining agreement on key areas of the assessment approach with the offshore ornithology ETG. In

Date	Contact Type	Topic
		addition, it aimed to address specific queries raised at ETG meeting 1 and within the Natural England scoping response, and provide preliminary outputs for several key areas of the assessment to inform ETG meeting 2.
4 <sup>th</sup> June 2020	Meeting	ETG Meeting 2: Agreement sought on assessment methodology, appropriateness of survey coverage (4km buffer), reporting regions, density estimates, CRM parameters, use of data from additional two survey cameras, Population Viability Analysis (PVA), approach to HRA screening.
7 <sup>th</sup> August 2020	Written communication	Discretionary advice provided on the Applicant's draft HRA screening, topics discussed included: Assessment methodology, HRA, CRM input parameters and PVA.
9 <sup>th</sup> December 2020	Meeting	ETG Meeting 3: Density estimates, CRM, migrant CRM, Sandwich tern PVA, displacement assessment methodology and HRA screening outcomes.
10 <sup>th</sup> July 2021	Section 42 Consultation	Natural England response to section 42 consultation on PEIR. See <a href="#">Consultation Report - Applicant's Response in Regard to S42 Comments</a> [APP-033].
10 <sup>th</sup> August 2021	Meeting	ETG Meeting 4: PEIR stakeholder comments, baseline data, CRM input parameters, PVA methodology and HRA.
16 <sup>th</sup> August 2021	Technical queries note	Note provided to Natural England and the Royal Society for the Protection of Birds (RSPB) requesting consultation on comments provided on the PEIR in relation to: Baseline data, survey design / coverage, CRM, PVA and FFC SPA input parameters.
10 <sup>th</sup> November 2021	Workshop	PVA workshop with Natural England to run through and agree the approach to PVA.
9 <sup>th</sup> February 2022	Meeting	ETG Meeting 5: agreement sought on CRM, design and model-based density estimation for Sandwich tern, Sandwich tern displacement rates, RTD assessment methodology, PVA, as-built versus consented designs and HRA.
16 <sup>th</sup> September 2022	Document	Natural England provided comments on draft versions of the Applicant's Offshore Ornithology ES chapter (including Technical Appendices and Annexes) and Report to Inform Appropriate Assessment (RIAA). These documents were provided to Natural England for comment under their Discretionary Advice Service (DAS) in June 2022.  The Applicant provided a written response to Natural England's comments on the 28 <sup>th</sup> of October 2022.
<b>Post-Submission</b>		
15 <sup>th</sup> November 2022	Meeting	Meeting held to discuss Natural England's comments on draft submissions (see above row) and the Applicant's responses to these. The Applicant and Natural England sought to agree the necessary workstreams required to address outstanding matters (see <a href="#">Section 1.2</a> ).

16. **Table 2-2** provides the SoCG between the Applicant and Natural England. Where appropriate, the Applicant has referenced Table 2 of the Natural England Relevant Representation [RR-063] regarding Natural England's position on cumulative impact assessment (CIA) and in-combination assessment conclusions. It is acknowledged

that those conclusions are for projects up to and including Hornsea Project 4 (HP4) or Norfolk Boreas, or East Anglia TWO / ONE North (EA2/1N) (depending on the species) and therefore exclude SEP and DEP. However, the Applicant anticipates that where Natural England has been unable to conclude that a significant adverse impact or adverse effect on site integrity can be ruled out on a cumulative basis, this position will be maintained since any further contribution by SEP and DEP, however small, would add to the existing effects. Likewise, where Natural England has been able to rule out a significant adverse impact or adverse effect on site integrity on a cumulative basis, given the small contributions from SEP and DEP, the Applicant has assumed that the Natural England position will again be maintained. This approach has been agreed with Natural England, although it is recognised that in some instances, Natural England may be unable to form a final position until the updated technical notes being progressed by the Applicant ([Section 1.2](#)) have been agreed. Sandwich tern at North Norfolk Coast SPA / Greater Wash SPA and RTD at Greater Wash SPA have not been subject to recent OWF consent decisions, and in these instances, Natural England's current position has been drawn from elsewhere in their Relevant Representation [RR-063].

*Table 2-2 Topics agreed, in discussion or not agreed in relation to offshore ornithology*

ID	The Applicant Position	Natural England Position	Position Summary
<b>Environmental Impact Assessment (EIA) (Policy and Planning)</b>			
1	All relevant plans and policies have been identified in Section 11.4 of ES <b>Chapter 11 Offshore Ornithology</b> [APP-097] and these have been appropriately considered in the assessment.	As far as Natural England is aware, all relevant plans and policies have been identified and appropriately considered in the assessment.	Agreed
<b>EIA (Existing Environment and Assessment Methodology)</b>			
Existing Environment			
2	The survey data collected is sufficient to inform the assessment.	Natural England notes the Evidence Plan Process as described in <b>Table 2-1</b> agreed the approach to survey data collection.  For RTD, survey data from the Greater Wash (GW) SPA that was collected in winter 2021/2022, may become available at some point in the future. At this stage Natural England are content with the data used to inform the EIA and HRA for RTD.	Agreed
3	The methods and techniques used to analyse offshore ornithological data are appropriate for characterising bird distributions and estimating populations.  Data from the second pair of cameras onboard the survey aircraft have been analysed for surveys carried out between March and September each year to reduce the variability about the mean design-based density estimates.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the approach to data analysis techniques.	Agreed
4	The methods used to define the relevant months for seabird breeding seasons in the assessment, presenting the full breeding season (as defined by Furness et al. (2015)) for all species for which this biologically defined season is relevant, is appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the approach to the definition of seabird breeding seasons.	Agreed
<i>Assessment Methodology (General)</i>			

ID	The Applicant Position	Natural England Position	Position Summary
5	The list of offshore ornithology receptors and the potential impacts assessed are appropriate for all phases of development.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the list of offshore ornithology receptors and impacts to be assessed.	Agreed
6	The methods for determining impact significance on all ornithological receptors is appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the methods for determining impact significance.	Agreed
7	The worst-case scenario used in the assessment for offshore ornithology is appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the approach to determining the worst-case scenario.  The worst-case scenario presented in <b>Table 11-2</b> of <b>Chapter 11 Offshore Ornithology</b> of the ES is in the format suggested by Natural England.	Agreed
8	The characterisation of receptor sensitivity is appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the approach to characterisation of receptor sensitivity.	Agreed
9	In terms of EIA, presentation of impact at the largest population size, as opposed to individual seasonal impacts is appropriate.  The Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] to address this point raised in the Natural England Relevant Representation [RR-063].	As noted in <b>Section 1.2</b> , the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
<i>Assessment Methodology (Construction Impacts)</i>			
10	The methods used to assess impacts during construction, including cable laying operations, based on mean density estimates and presenting a range of displacement and mortality rates including Natural England's recommended rates are appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the methods to assess impacts during construction.  Comments on the RTD, guillemot and razorbill construction phase assessment have been provided in Natural England's Relevant Representation [RR-063].  This matter is therefore agreed for all species except RTD, guillemot and razorbill.	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
		<p>As noted in <b>Section 1.2</b>, the Applicant is seeking to address outstanding construction assessment methodological concerns for auks (i.e. guillemot and razorbill) within the <b>Auk Construction Phase Displacement Assessment (EIA Context) Technical Note</b> [document reference 14.28] and for RTD within the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3]. Following review of these, Natural England anticipates being able to provide an updated position in relation to RTD, guillemot and razorbill construction phase assessments.</p>	
<i>Assessment Methodology (Operation Impacts)</i>			
11	<p>The methods used to assess operational disturbance, displacement and barrier effects, based on mean density estimates and presenting a range of displacement and mortality rates including Natural England's recommended rates are appropriate for <b>auks</b>.</p>	<p>Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the methods to assess impacts during operation.</p> <p>As noted in <b>Section 1.2</b>, the Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
12	<p>The methods used to assess operational disturbance, displacement and barrier effects, based on mean density estimates and presenting a range of displacement and mortality rates including Natural England's recommended rates are appropriate for <b>gannet</b>.</p> <p>The <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] provides a revised approach to gannet apportioning and an updated displacement assessment using updated parameters for gannet.</p>	<p>As noted in <b>Section 1.2</b>, the Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
13	<p>The methods used to assess operational disturbance, displacement and barrier effects, based on mean density estimates and presenting a range of displacement and mortality rates including Natural England's recommended rates are appropriate for <b>RTD</b>.</p>	<p>As noted in <b>Section 1.2</b>, the Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	<p>An updated Greater Wash SPA operational RTD displacement assessment has been presented in the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3].</p>		
14	<p><u>Sandwich tern macro-avoidance</u></p> <p>The CRM outputs which informed ES <b>Chapter 11 Offshore Ornithology</b> [APP-097] and the <b>RIAA</b> [APP-059] use various macro-avoidance parameters for Sandwich tern. Applying some form of macro-avoidance factor (0.25-0.50) to CRM outputs is considered to be appropriate, however these assessments are presented for information purposes only and do not form the basis of the assessment conclusions or the scale of compensation required.</p>	<p>Natural England does not consider it appropriate to apply a macro-avoidance rate to CRM outputs in combination with the revised avoidance rates (ARs) that Natural England recently provided. We consider that the evidence base for Sandwich tern macro-avoidance (MA) would require careful collation and analysis, which is not possible in the time frames of the SEP and DEP projects.</p> <p>In addition to the lack of a suitably analysed and peer-reviewed evidence base, Natural England notes that the revised ARs for Sandwich tern are actually an ‘all gulls and terns’ AR, as opposed to the ‘all tern’ rate (which is approximately 97%). As can be seen, the ‘all gulls and terns’ rate is not precautionary when compared to the tern alone rate, and it is not therefore appropriate to reduce this rate further by applying an additional MA rate.</p> <p>Natural England will review revisions to the CRM as submitted into examination.</p>	Not Agreed – no material impact
15	<p><u>Sandwich tern displacement assessment</u></p> <p>A Sandwich tern displacement assessment is not required. The Sandwich tern displacement and combined displacement and collision risk assessment presented within ES <b>Chapter 11 Offshore Ornithology</b> [APP-097] and the <b>RIAA</b> [APP-059] are for information purposes only.</p>	<p>Natural England does not require a separate displacement assessment for Sandwich tern.</p>	Agreed
16	<p>CRM: Use of deterministic CRM (i.e. as calculated via the Band spreadsheets) is appropriate. Extended or stochastic CRMs are not to be used.</p>	<p>Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the use of deterministic CRM.</p>	Agreed
17	<p>CRM: Use of the following species-specific avoidance rates, which are assessed in the <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] and based on Appendix B1 Draft Updated Collision Risk Modelling</p>	<p>The Natural England position is set out in Relevant Representation Appendix B1 Draft Updated Collision Risk Modelling Parameters of the Natural England Relevant Representations [RR-063].</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	<p>Parameters of the Natural England Relevant Representations [RR-063] is agreed.</p> <ul style="list-style-type: none"> <li>• Sandwich tern (0.990)</li> <li>• Gannet (0.992)</li> <li>• Kittiwake (0.992)</li> <li>• Great black-backed gull (GBBG) (0.994)</li> <li>• Lesser black-backed gull (LBBG) (0.994)</li> <li>• Little gull (0.990)</li> </ul>	<p>Natural England will review revisions to the CRM as submitted into examination.</p>	
18	<p>CRM: Flight height distributions from “Corrigendum,” 2014 and Johnston et al., 2014 that have been used in other offshore wind farm assessments are appropriate for CRM. For Sandwich tern, flight height distributions from an additional data source (Harwood, 2021), collected during the Sheringham Shoal post-construction monitoring programme should also be presented.</p>	<p>Discussed during the Evidence Plan Process as described in <a href="#">Table 2-1</a> which agreed the selection of appropriate flight height distributions.</p>	Agreed
19	<p><u>CRM: Sandwich Tern Flight Speeds</u></p> <p>The Sandwich tern flight speeds from Fijn and Collier (2020) are the most appropriate flight speed parameters on which to base the conclusions of the assessment. CRM for flight speeds from Fijn and Collier (2018) are presented alongside this for information.</p>	<p>Natural England welcome presentation of CRM outputs using both sets of flight speeds and will use both studies to inform their position however the Fijn and Collier (2020) has not been the subject of a detailed peer review process, and in the absence of peer review, Natural England is not in a position to recommend the use of this dataset in isolation.</p>	Not Agreed – no material impact
20	<p>PVA: Use of data up to 2019 for Sandwich tern PVA calculations is agreed. Reference is provided to 2021 counts.</p>	<p>Discussed during the Evidence Plan Process as described in <a href="#">Table 2-1</a> which agreed the data range to be included in Sandwich tern PVA. However, Natural England has raised some queries regarding some of the data points used in our Relevant Representations [RR-063].</p>	In discussion
21	<p>The methods for assessing indirect effects are appropriate.</p>	<p>Discussed during the Evidence Plan Process as described in <a href="#">Table 2-1</a> which agreed the methods for assessing indirect effects.</p>	Agreed
<b>EIA Project-Alone Conclusions</b>			



ID	The Applicant Position	Natural England Position	Position Summary
22	<p><u>Assessment conclusions (construction disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from project-alone impacts on <b>guillemot, razorbill and RTD</b> during construction are correctly identified and predicted. No impacts of greater than minor adverse significance are predicted.</p>	<p>As noted in <b>Section 1.2</b>, the Applicant has submitted an <b>Auk Construction Phase Displacement Assessment (EIA Context) Technical Note</b> [document reference 14.28] at Deadline 2 which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
23	<p><u>Assessment conclusions (operational disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from disturbance, displacement and barrier effects on <b>gannet, guillemot, razorbill, RTD</b> during operation are correctly identified and predicted. No impacts of greater than <b>minor adverse significance</b> are predicted.</p>	<p>Natural England agrees that in the case of <b>gannet, guillemot, razorbill, RTD</b>, no impacts of greater than <b>minor adverse significance</b> are predicted.</p>	Agreed
24	<p><u>Assessment conclusions (operational disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from disturbance, displacement and barrier effects on <b>Sandwich tern</b> during operation are correctly identified and predicted. An impact of <b>minor adverse significance</b> is predicted.</p>	<p>As noted in ID 14, Natural England does not accept the application of a macro-avoidance rate to collision calculations. We also have not sought a displacement assessment for impacts on Sandwich tern. We do however agree that disturbance, displacement and barrier effects will have a minor adverse impact on this species, so this specific conclusion can be agreed.</p>	Agreed
25	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, the magnitude of effects and conclusions on significance resulting from collision impacts for the following species during operation are correctly identified and predicted. No impacts of greater than <b>minor adverse significance</b> are predicted for all species:</p> <ul style="list-style-type: none"> <li>• Sandwich tern</li> <li>• Gannet</li> </ul>	<p>As noted in <b>Section 1.2</b>, the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which aims to address outstanding matters relating to assessment methodologies. Following review of this technical note Natural England anticipates being able to provide an updated position.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	<ul style="list-style-type: none"> <li>• Kittiwake</li> <li>• GBBG</li> <li>• LBBG</li> <li>• Little gull</li> </ul>		
26	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>The magnitude of effects and conclusions on significance resulting from collision impacts for the following species during operation are correctly identified and predicted. No impacts of greater than <b>minor adverse significance</b> are predicted for the following species:</p> <ul style="list-style-type: none"> <li>• Black-headed gull</li> <li>• Common gull</li> <li>• Common tern</li> <li>• Herring gull</li> <li>• Non-breeding waterbirds</li> </ul>	<p>Natural England agrees that in the case of the listed species no impacts of greater than <b>minor adverse significance</b> are predicted.</p>	Agreed
27	<p><u>Assessment conclusions (combined operational displacement and collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, the magnitude of effects and conclusions on significance resulting from combined operational displacement and collision impacts for <b>gannet</b> during operation are correctly identified and predicted. No impacts of greater than <b>minor adverse significance</b> are predicted.</p>	<p>As noted in <b>Section 1.21.2</b>, the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] and which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
28	<p><u>Assessment conclusions (indirect effects during construction, operation and decommissioning)</u></p> <p>The magnitude of effects and conclusions on significance resulting from indirect effects during construction, operation and decommissioning are correctly identified and</p>	<p>Our position is pending the outcome on discussion between CEFAS, Natural England and the Applicant on impacts to seabird prey availability.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	predicted. No impacts of greater than <b>minor adverse significance</b> are predicted.		
29	<p><u>Assessment conclusions (decommissioning disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from impacts during decommissioning are correctly identified and predicted. No impacts of greater than <b>minor adverse significance</b> are predicted.</p>	Agreed noting that decommissioning is expected to be subject to new regulatory approval /marine licence near the time of decommissioning.	Agreed
<b>EIA (CIA)</b>			
30	The plans and projects assessed within the CIA are appropriate.	As noted in <b>Section 1.2</b> , the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which aims to address outstanding matters relating to the CIA with other plans and projects. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
31	<p><u>Assessment conclusions (operational disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from cumulative disturbance, displacement and barrier effects on <b>guillemot, razorbill and RTD</b> during operation are correctly identified and predicted and no impacts of greater than <b>minor adverse significance</b> are predicted.</p>	<p>As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], Natural England is unable to rule out cumulative significant adverse impact on guillemot, razorbill and RTD due to operational displacement impacts for projects up to and including HP4 (for guillemot and razorbill) and EA2/1N (for RTD).</p> <p>Given that impacts from SEP and DEP will further contribute to this impact, a significant adverse impact cannot be ruled out and therefore this matter is not agreed.</p>	Not agreed – material impact
32	<p><u>Assessment conclusions (operational disturbance, displacement and barrier effects)</u></p> <p>The magnitude of effects and conclusions on significance resulting from cumulative disturbance, displacement and barrier effects on <b>gannet</b> during operation are correctly identified and predicted and no impacts of greater than <b>minor adverse significance</b> are predicted.</p>	The cumulative totals for gannet presented in the ES (e.g. table 11-33) include Hornsea 4 PEIR figures. These should be updated for displacement.	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
33	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, combined with like for like figures for other projects (as far as possible given the information available), the magnitude of effects and conclusions on significance resulting from cumulative collision impacts on <b>gannet</b> and <b>kittiwake</b> during operation are correctly identified and predicted i.e. <b>minor adverse significance</b>.</p>	<p>As per Table 2 of Appendix B of Natural England's Relevant Representation [RR-063], Natural England was unable to rule out cumulative significant adverse impact on kittiwake and gannet (collision risk) for projects up to and including HP4 but excluding SEP and DEP. However, Natural England has suggested CRM is updated to reflect new parameters (section 2 RR-063) and the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which aims to address outstanding matters relating to CRM and the CIA with other plans and projects. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
34	<p><u>Assessment conclusions (combined operational displacement and collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, combined with like for like figures for other projects (as far as possible given the information available), the magnitude of effects and conclusions on significance resulting from cumulative collision impacts and cumulative combined collision and displacement impacts on <b>gannet</b> during operation are correctly identified and predicted i.e. <b>minor adverse significance</b>.</p>	<p>As per Table 2 of Appendix B of Natural England's Relevant Representation [RR-063], Natural England was unable to rule out cumulative significant adverse impact on gannet (combined collision risk and displacement) for projects up to and including HP4 but excluding SEP and DEP. However, Natural England has suggested CRM is updated to reflect new parameters (Section 2 RR-063) and as noted in <b>Section 1.2</b>, the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which aims to address outstanding matters relating to CRM and the CIA with other plans and projects. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
35	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, combined with like for like figures for other projects (as far as possible given the information available), the magnitude of effects and conclusions on significance resulting from cumulative collision risk impacts on <b>GBBG</b> during operation are correctly identified and predicted i.e. <b>moderate adverse significance</b>.</p>	<p>As per Table 2 of Appendix B of Natural England's Relevant Representation [RR-063], Natural England is unable to rule out cumulative significant adverse impact on GBBG for projects up to and including HP4 but excluding SEP and DEP. Therefore, any impact from SEP and DEP will be making an additional contribution to the GBBG totals.</p>	Agreed
36	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, combined with like for like figures for other</p>	<p>As per Table 2 of Appendix B of Natural England's Relevant Representation [RR-063], Natural England concludes no significant</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	<p>projects (as far as possible given the information available), the magnitude of effects and conclusions on significance resulting from cumulative collision risk impacts on <b>LBBG and little gull</b> during operation are correctly identified and predicted i.e. <b>minor adverse significance</b>.</p>	<p>adverse impact on LBBG and little gull for projects up to and including HP4, but excluding SEP and DEP.</p> <p>As noted in <b>Section 1.2</b>, the Applicant has submitted a <b>CRM Updates (EIA Context) Technical Note</b> [REP1-056] which includes updated CIA. Following review of this, Natural England anticipates being able to provide an updated position.</p>	
37	<p><u>Assessment conclusions (operational collision risk)</u></p> <p>Using Natural England's preferred input parameters and model methods, combined with like for like figures for other projects (as far as possible given the information available), the magnitude of effects and conclusions on significance resulting from cumulative collision risk impacts on <b>herring gull</b> during operation are correctly identified and predicted i.e. <b>minor adverse significance</b>.</p>	<p>Natural England agree that the cumulative collision risk impacts on <b>herring gull</b> during operation are correctly identified and predicted i.e. <b>minor adverse significance</b>.</p>	Agreed
38	<p><u>Cumulative Scenarios</u></p> <p>For the Sandwich tern CIA, basing assessment conclusions on cumulative Scenario E<sup>1</sup> (Section 2.3 of the CRM Updates (EIA Context) Technical Note [REP1-056] and <b>Table 11-162</b> of ES <b>Chapter 11 Offshore Ornithology</b> [APP-097]) represents an appropriate compromise position in the absence of legally secured as-built designs.</p>	<p>'Natural England will base its conclusions on the consented parameters unless clearly legally secured, and as noted in our Examiners Questions response [REP1-139] we are not clear whether this is the case for DOW.</p>	In discussion
39	<p><u>Cumulative Scenarios</u></p> <p>The Applicant considers that use of Scenario E in the Sandwich tern CIA overestimates the cumulative collisions and that Scenario B (i.e. operational collision predictions based on as-built turbine parameters) is most representative of the actual effect since any build out of</p>	<p>Natural England requires that an 'as-built' scenario is 'legally secure', and therefore until such time as this is secured for relevant projects, considers Scenario A which is 'consented' is an appropriate one to consider impacts on Sandwich tern at the CIA scale.</p>	Not Agreed – no material impact

<sup>1</sup> Based on as-built turbine parameters, with unbuilt consented capacity assumed to be built using as-built turbine designs, except for Dudgeon Offshore Wind Farm (DOW), for which the as-built design is assumed to be legally secured.

ID	The Applicant Position	Natural England Position	Position Summary
	additional capacity by projects would have to be reconcented or be subject to a material change, subsequent to which, updated collision risk predictions would become available for input into future CIAs.		
<b>Mitigation and Monitoring</b>			
40	<p><u>Air gap mitigation</u></p> <p>An increase in air-draft from 22m to 30m (first raised from 22m as originally presented at scoping then from 26m to 30m at PEIR stage) over highest astronomical tide (HAT) committed to by the Applicant is appropriate mitigation to reduce potential collision risk upon ornithological receptors (including those for which a significant cumulative or in-combination effect is predicted).</p> <p>The Applicant has provided the rationale for the extent of air gap mitigation within the <a href="#">HRA Derogation: Provision of Evidence</a> [APP-063].</p>	<p>Natural England recognise that an air gap increase since PEIR from 26m to 30m HAT substantially decreases collision risk for most species. It is acknowledged that further air gap increases could potentially be achieved and would further reduce the project's contribution to cumulative/in-combination impacts, but Natural England acknowledges the Applicant's view that this has the potential to affect project viability and result in potential increased seascape impacts.</p>	Agreed
41	<p><u>RTD best practice protocol</u></p> <p>The measures within the best practice protocol for avoiding disturbance to RTD are appropriate.</p> <p>Provided within <a href="#">Table 11-4</a> of <a href="#">Chapter 11 Offshore Ornithology</a> [APP-097] and secured through the <a href="#">Outline Project Environmental Management Plan (PEMP) (Revision B)</a> [REP1-017].</p>	<p>Whilst the adoption of the BPP is welcome, Natural England is not currently able to conclude that this will be sufficient to address impacts from vessels on RTD in the Greater Wash SPA. We will revisit our conclusions on receipt of the <a href="#">Apportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3].</p> <p>Natural England also highlights that further discussion is required on how RTD BPP is secured in the DCO/DML. See ID 73.</p>	In discussion
42	<p><u>RTD potential mitigation options</u></p> <p>The <a href="#">RIAA</a> [APP-059] concludes that an adverse effect on integrity of the RTD feature of the Greater Wash SPA can be ruled out for vessel effects during construction and operation and maintenance and for operational array related displacement. Therefore, the Applicant considers there to be no further requirement for mitigation beyond</p>	<p>As noted at ID 48 and 49, the Applicant is updating the GW SPA red-throated diver assessments. Natural England anticipates being able to provide an updated position following review of this.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	that already committed to within the <b>Outline PEMP (Revision B)</b> [REP1-017].		
43	<u>Monitoring</u> The offshore ornithology monitoring proposals within the <b>Offshore In-Principle Monitoring Plan</b> [APP-289] are appropriate.	Natural England is currently reviewing the <b>Offshore In Principle Monitoring Plan</b> [APP-289] and will provide an updated position following this review.	In discussion
<b>Report to Inform Appropriate Assessment (RIAA)</b>			
44	<u>Screening of Likely Significant Effect (LSE)</u> The approach to HRA screening is appropriate.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the methods to be used to screen LSE.	Agreed
45	The SPA sites, offshore ornithology species screened in, and effects assessed are appropriate.	Described within the <b>HRA Screening Matrices</b> [APP-061] and discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the HRA screening.  Natural England advised within their Relevant Representation [RR-063] that impacts on puffin, as a component species of the seabird assemblage, are required to be screened in and assessed within the HRA's consideration of impacts upon the seabird assemblage.  The Applicant has submitted an assessment of the puffin and seabird assemblage features of the FFC SPA both of which are covered within the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] and therefore, this matter is agreed.	Agreed
46	<u>Apportioning</u> The assumptions used with regard to apportioning and overall approach to apportioning is appropriate.  The Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which provides an updated approach to apportioning for LBBG, guillemot, razorbill, gannet and kittiwake.	Discussed during the Evidence Plan Process as described in <b>Table 2-1</b> which agreed the approaches to apportioning.  As noted in <b>Section 1.2</b> , the Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
<i>Project-Alone Assessment Conclusions</i>			

ID	The Applicant Position	Natural England Position	Position Summary
47	<p><u>Sandwich tern – Greater Wash and North Norfolk Coast SPAs</u></p> <p>Predicted project-alone Sandwich tern mortality from operational phase displacement, collision risk and combined displacement and collision risk <b>would not adversely affect</b> the integrity of the Greater Wash SPA and North Norfolk Coast SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
48	<p><u>RTD – Greater Wash SPA (construction phase displacement)</u></p> <p>Predicted project-alone construction phase RTD displacement / barrier effects within the export cable corridor <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] at Deadline 2 which incorporates 'effective area of displacement' calculations from export cable laying vessel activity for RTD. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
49	<p><u>RTD – Greater Wash SPA (operational phase displacement / barrier effects)</u></p> <p>Predicted project-alone operational phase RTD displacement / barrier effects <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
50	<p><u>RTD – Greater Wash SPA (operational phase displacement due to vessel activity)</u></p> <p>Predicted project-alone operational phase RTD displacement within the operation and maintenance vessel transit corridor <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As above. As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position</p>	In discussion
51	<p><u>RTD – Outer Thames Estuary SPA (operational phase displacement due to vessel activity)</u></p> <p>Predicted project-alone operational phase RTD displacement within the operation and maintenance vessel transit corridor <b>would not adversely affect</b> the integrity of the Outer Thames Estuary SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion



ID	The Applicant Position	Natural England Position	Position Summary
52	<u>Kittiwake – FFC SPA</u> Predicted project-alone kittiwake mortality from collision risk <b>would not adversely affect</b> the integrity of the FFC SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
53	<u>Gannet – FFC SPA</u> Predicted project-alone gannet mortality from operational phase displacement, collision risk and combined displacement and collision risk <b>would not adversely affect</b> the integrity of the FFC SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of these technical notes Natural England anticipates being able to provide an updated position.	In discussion
54	<u>Guillemot – FFC SPA</u> Predicted project-alone guillemot mortality from operational phase displacement <b>would not adversely affect</b> the integrity of the FFC SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
55	<u>Razorbill – FFC SPA</u> Predicted project-alone razorbill mortality from operational phase displacement <b>would not adversely affect</b> the integrity of the FFC SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of these technical notes Natural England anticipates being able to provide an updated position.	In discussion
56	<u>LBBG – Alde-Ore Estuary SPA</u> Predicted project-alone LBBG mortality from collision risk <b>would not adversely affect</b> the integrity of the Alde-Ore Estuary SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
57	<u>Little Gull – Greater Wash SPA</u> Predicted project-alone little gull mortality from collision risk <b>would not adversely affect</b> the integrity of the Greater Wash SPA.	As noted in <a href="#">Section 1.2</a> , the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
58	<p><u>Breeding Seabird Assemblage – FFC SPA</u></p> <p>Predicted project-alone mortalities to the FFC SPA seabird assemblage with other projects, <b>would not adversely affect</b> the integrity of the FFC SPA.</p>	<p>As noted in <b>Section 1.2</b>, the Applicant has included a FFC SPA Breeding Seabird Assemblage Assessment within the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3]. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
59	<p><u>All other sites and species assessed within the RIAA [APP-059]</u></p> <p>There would be no project-alone adverse effect on integrity of any of the sites and qualifying features not listed above and assessed within the <b>RIAA</b> [APP-059].</p>	<p>Natural England agrees there will be no project alone adverse effect on integrity of any other sites and qualifying features not listed above.</p>	Agreed
<i>In-combination Assessment Conclusions</i>			
60	<p><u>Sandwich tern – Greater Wash and North Norfolk Coast SPAs</u></p> <p>An adverse effect on the integrity of the North Norfolk Coast SPA and Greater Wash SPA <b>cannot be ruled out</b> as a result of predicted Sandwich tern mortality due to collision risk and combined operational phase displacement and collision risk in-combination with other projects.</p> <p>The Applicant notes that indirect impacts through effects on habitats and prey species was not screened into the project alone or in-combination assessment for North Norfolk Coast SPA and Greater Wash SPA Sandwich tern – as outlined in ID 44 and 45, the HRA Screening was agreed with Natural England during the Evidence Plan Process.</p>	<p>As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], since Round 3, Natural England has been unable to rule out AEoI on the Sandwich tern feature of the North Norfolk Coast SPA and Greater Wash SPA due to in-combination collision risk. In addition, Natural England has concerns about potential impacts on prey resource. This matter is in discussion with the Applicant and Cefas regarding prey resource availability.</p>	In discussion
61	<p><u>RTD – Greater Wash SPA (construction phase displacement)</u></p> <p>Predicted construction phase RTD displacement within the export cable corridor, in-combination with other projects, <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As noted in <b>Section 1.2</b>, the Applicant is intending to submit an update to the <b>Apportioning and HRA Updates Technical Note</b> at Deadline 2 which will incorporate ‘effective area of displacement’ calculations for RTD. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
62	<p><u>RTD – Greater Wash SPA (operational phase displacement / barrier effects)</u></p> <p>Predicted operational phase RTD displacement / barrier effects, in-combination with other projects, <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
63	<p><u>RTD – Greater Wash SPA (operational phase displacement due to vessel activity)</u></p> <p>Predicted operational phase RTD displacement within the operation and maintenance vessel transit corridor, in-combination with other projects, <b>would not adversely affect</b> the integrity of the Greater Wash SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
64	<p><u>RTD – Outer Thames Estuary SPA (operational phase displacement due to vessel activity)</u></p> <p>Predicted operational phase RTD displacement within the operation and maintenance vessel transit corridor, in-combination with similar activities associated with other offshore wind farms, <b>would not adversely affect</b> the integrity of the Outer Thames Estuary SPA.</p>	<p>As noted in <a href="#">Section 1.2</a>, the Applicant has submitted an <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.</p>	In discussion
65	<p><u>Kittiwake – FFC SPA</u></p> <p>An adverse effect on the integrity of the FFC SPA <b>cannot be ruled out</b> as a result of predicted kittiwake mortality due to collision risk.</p>	<p>As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], Natural England is unable to rule out AEol on the kittiwake feature of the FFC SPA due to collision risk in-combination for projects up to and including HP4 but excluding SEP and DEP. SEP and DEP will make a contribution to the in-combination impacts.</p>	Agreed
66	<p><u>Gannet – FFC SPA</u></p> <p>Predicted gannet mortality from operational phase displacement, collision risk and combined displacement and collision risk, in-combination with other projects, <b>would not adversely affect</b> the integrity of the FFC SPA.</p>	<p>As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], there would be no AEol on the gannet feature of the FFC SPA from collision risk and combined displacement and collision risk, in-combination for projects up to and including HP4 but excluding SEP and DEP. Following review of the <a href="#">Appportioning and HRA Updates Technical Note (Revision B)</a> [document reference</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
		13.3], Natural England anticipates being able to provide an updated position regarding the in-combination impact including SEP and DEP.	
67	<u>Guillemot – FFC SPA</u> Predicted guillemot mortality from operational phase displacement, in-combination with other projects, <b>would not adversely affect</b> the integrity of the FFC SPA.	As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], Natural England is unable to rule out AEoI on the guillemot feature of the FFC SPA due to displacement in-combination for projects up to and including HP4 but excluding SEP and DEP. SEP and DEP will make a contribution to the in-combination impacts.	Not agreed – material impact
68	<u>Razorbill – FFC SPA</u> Predicted razorbill mortality from operational phase displacement, in-combination with other projects, <b>would not adversely affect</b> the integrity of the FFC SPA.	As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], Natural England is unable to rule out AEoI on the razorbill feature of the FFC SPA due to displacement in-combination for projects up to and including HP4 but excluding SEP and DEP. SEP and DEP will make a contribution to the in-combination impacts.	Not agreed – material impact
69	<u>LBBG – Alde-Ore Estuary SPA</u> Predicted LBBG mortality from collision risk, in-combination with other projects, <b>would not adversely affect</b> the integrity of the Alde-Ore Estuary SPA.	As per Table 2 of Appendix B of Natural England’s Relevant Representation [RR-063], Natural England is unable to rule out AEoI on the LBBG feature of the Alde-Ore Estuary SPA due to collision in-combination for projects up to and including HP4 but excluding SEP and DEP. At this stage the possibility that SEP and DEP will make a contribution to the in-combination impacts cannot be ruled out. Natural England will review the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] regarding this matter.	In discussion
70	<u>Little Gull – Greater Wash SPA</u> Predicted little gull mortality from collision risk, in-combination with other projects, <b>would not adversely affect</b> the integrity of the Greater Wash SPA.	As noted in <b>Section 1.2</b> , the Applicant has submitted an <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3] which aims to address outstanding matters relating to assessment methodologies. Following review of this, Natural England anticipates being able to provide an updated position.	In discussion
71	<u>Breeding Seabird Assemblage – FFC SPA</u> Predicted mortalities to the FFC SPA seabird assemblage in-combination with other projects, <b>would not adversely affect</b> the integrity of the FFC SPA.	As noted in <b>Section 1.2</b> , the Applicant has included a FFC SPA Breeding Seabird Assemblage Assessment within the <b>Apportioning and HRA Updates Technical Note (Revision B)</b> [document reference 13.3]. Natural England will advise further on this issue once a seabird assemblage impact assessment is provided, but highlights that at the	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
		close of the Hornsea 4, Natural England was unable to rule out adverse effects alone or in-combination on the FFC SPA seabird assemblage.	
72	<p><u>All other sites and species assessed within the <a href="#">RIAA [APP-059]</a></u></p> <p>There would be no in-combination adverse effect on integrity of any of the sites and qualifying features not listed above and assessed within the <a href="#">RIAA [APP-059]</a>.</p>	Natural England agrees there will be no in-combination adverse effect on integrity of any other sites and qualifying features not listed above, where we are 'in-discussion'.	Agreed
<b>Development Consent Order (DCO)</b>			
73	<p><u>Wording of conditions</u></p> <p>The wording of the following conditions pertaining to ornithology are appropriate and adequate:</p> <p>Condition 13(1)(j) of Schedule 10, Condition 13(1)(j) of Schedule 11, Condition 12(1)(k) of Schedule 12 and Condition 12(1)(k) of Schedule 13 with reference to the development of a monitoring plan</p> <p>Condition 13(1)(d)(vi) of Schedule 10, Condition 13(1)(d)(vi) of Schedule 11, Condition 12(1)(d)(vi) of Schedule 12 and Condition 12(1)(d)(vi) of Schedule 13 with reference to the project environmental management plan and procedures to minimise disturbance to RTD through implementation of a best practice protocol for minimising disturbance.</p> <p>Condition 18(4)(c) of Schedule 10, Condition 18(4)(c) of Schedule 11, Condition 17(4)(d) of Schedule 12 and Condition 17(4)(d) of Schedule 13 with reference to pre-construction ornithological monitoring.</p> <p>Condition 20(3)(c) of Schedule 10, Condition 20(3)(c) of Schedule 11, Condition 19(3)(c) of Schedule 12 and</p>	<p>Natural England has raised concerns around the wording of several conditions in our relevant representation Appendix A.</p> <p>In addition, there are further ongoing conditions around the mitigation, monitoring requirements and in-principle monitoring plan, which will likely lead to further discussion around the appropriateness of the conditions.</p> <p>Natural England notes that the Applicant has responded to our Appendix A at Deadline 1 (see <a href="#">The Applicant's Comments to Relevant Representations [REP1-033 and REP1-034]</a>) and anticipates being able to provide an updated position following review of those responses and further discussion with the Applicant.</p>	In discussion

ID	The Applicant Position	Natural England Position	Position Summary
	Condition 19(3)(c) of Schedule 13 with reference to post-construction ornithological monitoring.		
<b>Other Matters As Required</b>			
74	The Applicant notes that Natural England has formulated some initial guidance (Appendix B2 of RR-063) regarding the implications of Highly Pathogenic Avian Influenza (HPAI) for OWF impact assessments. In light of this, the Applicant does not consider that any updates to the assessments already presented are required; however, the Applicant will be guided by the Statutory Nature Conservation Bodies (SNCBs) on how HPAI may need to be considered in future.	Natural England considers it may be useful to compile available information on current understanding of impacts of HPAI to key species/colonies of relevance to the SEP and DEP application (Species: sandwich tern, kittiwake, guillemot, razorbill, little gull, RTD, gannet, LBBG, puffin, colonies: FFC SPA, NNC SPA, Alde-Ore Estuary SPA, GW SPA).	In discussion

### 3 Signatures

17. The above draft SoCG is agreed between Equinor New Energy Limited and Natural England on the day specified below.

Signed: \_\_\_\_\_

Print Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Date: \_\_\_\_\_

Duly authorised for and on behalf of **Natural England**

Signed: \_\_\_\_\_

Print Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Date: \_\_\_\_\_

Duly authorised for and on behalf of **Equinor New Energy Limited**

## References

Fijn, R.C., Gyimesi, A., 2018. Behaviour related flight speeds of Sandwich Terns and their implications for wind farm collision rate modelling and impact assessment. *Environmental Impact Assessment Review* 71, 12–16.

Fijn, R.C., Collier, M.P., 2020. Flight speeds of Sandwich terns off the Norfolk Coast (Internal document for Equinor). Bureau Waardenburg bv.

Harwood, A., 2021. Preliminary investigation into Sandwich tern flight height distributions: Technical note for Natural England (draft). ECON Ecological Consultancy Ltd.

Corrigendum, 2014. *Journal of Applied Ecology* 51, 1126–1130.

Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M., Burton, N.H.K., 2014. Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. *Journal of Applied Ecology* 51, 31–41.



## Annex 1 Offshore Ornithology Agreement Log

ID	Agreement	Natural England	RSPB	MMO	Notes
<b>1 Agreement of baseline status</b>					
1.1	Agreement on the survey scope and methods for the site specific aerial surveys.	-	-	-	<p>Broadly agreed subject to understanding:</p> <ul style="list-style-type: none"> <li>• timing of survey flights to understand whether diurnal foraging peaks are likely to have been recorded</li> <li>• variability of the data and assessing the need to analyse the data from the two additional cameras</li> <li>• The occurrence of red-throated diver beyond the 4km buffer, particularly between the Greater Wash SPA and the survey area, needs to be understood.</li> </ul>
1.2	Agreement on the key ornithology species for assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	Key species identified as Sandwich tern, kittiwake, gannet, guillemot, little gull, red-throated diver, lesser black-backed gull and great black backed gull, but noting that other species will be considered.
1.3	Agreement on approach to ornithology density estimates (derived from aerial surveys, design-based, split in to appropriate reporting regions for biologically relevant seasons)	-	-	-	<p>Investigate merit of a model-based approach.</p> <p>Define and agree 'biologically relevant seasons.'</p> <p>A more defined method for estimating density (including Bootstrapping and Poisson error regression approach) will be provided in a Method Statement.</p>
1.4	Agreement on baseline data sources	-	-	-	<p>Broad agreement of sources identified by Equinor/RHDHV in ETG slides.</p> <p>Equinor/RHDHV will also source recent/imminent sources identified by the ETG. A final list of sources will be included in the Method Statement.</p>
<b>2 Agreement of assessment methodology</b>					

ID	Agreement	Natural England	RSPB	MMO	Notes
2.1	Agreement of potential impacts to be assessed.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and Scoping Opinion, and summarised in the ETG meeting slides.
2.2	Agreement of the proposed impact assessment methodology approach.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.3	Agreement of the proposed approach to cumulative impact assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.4	Agreement of the proposed approach to Habitats Regulations Assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.5	Agreement of the proposed approach to consultation.	-	-	-	As described in the Scoping Report and summarised in the ETG meeting slides. Equinor/RHDHV to produce a detailed timeline and share with the ETG.
2.6	Agreement on the Method Statement.	-	-	-	Equinor/RHDHV to issue for consultation and discussion with the ETG.
2.6.1	Agreement on the Collision Risk Model (CRM) to use.	-	-	-	Stochastic or deterministic Folkerts CRM.
2.6.2	Agreement on the scope of collision risk assessment (CRM for which wind farms).	-	-	-	ETG agreed that CRM will need to be rerun for wind farms using updated data. List of wind farms to be confirmed.
2.6.3	Agreement on the CRM inputs – Flight heights.	-	-	-	As described in the ETG meeting slides. Current position is to use Johnston <i>et al.</i> (2014) flight height distribution data and Option 2 CRM. However, further assessment of Sheringham Shoal OMP data, and investigation of aerial survey data to inform potential changes in flights height values is proposed.
2.6.4	Agreement on the CRM inputs – Avoidance rates.	-	-	-	Review of latest evidence. Equinor/RHDHV proposing to use Sheringham Shoal post construction monitoring (Harwood <i>et al.</i> 2018) for Sandwich tern

ID	Agreement	Natural England	RSPB	MMO	Notes
					which estimates 0.994. Official position of Natural England and RSBP is 0.98 but this is under review.
2.6.5	Agreement on the CRM inputs – Flight speed.	-	-	-	Equinor/RHDHV proposing to use a recent study by Fijn and Gyimesi (2018) informing sandwich tern flight speeds for different behaviours. ETG to review this source.
2.6.6	Agreement on the CRM inputs – As-built versus consented	-	-	-	<p>There are 124 more consented turbines across Dudgeon OWF, Race Bank OWF and Triton Knoll OWF than have been installed. Equinor/RHDHV propose that CRM assessment based on as built information rather than consented would be more realistic.</p> <p>Natural England and RSPB have stated that for this to be acceptable they would require legally secured documentary proof that with no further change (from as built) possible, and that the worst-case scenario design envelope is considered for projects that are not yet built. As built scenarios should also be accompanied with equivalent information for the ‘as consented’ and as ‘as proposed’ scenarios.</p> <p>Equinor will investigate options to deliver “legally secured documentary proof” for existing wind farms.</p>
2.6.6	Agreement on the Population Viability Analysis (PVA) - Tool to use.	Agreed (09/01/20)	Agreed (09/01/20)	-	ETG agreed use of the Natural England PVA tool.
2.6.7	Agreement on the PVA – Input parameters to be updated.	Agreed (09/01/20)	Agreed (09/01/20)	-	<p>As described in the ETG meeting slides.</p> <p>The ETG broadly agreed that the parameters used in the DECC (2012) Appropriate Assessment should be reviewed and updated where necessary.</p>
2.6.8	Agreement on the PVA – Revised Sandwich tern starting population to be used.	Agreed (09/01/20)	Agreed (09/01/20)	-	Sandwich tern starting population from JNCC, 2019 (Mean 4,401 pairs (419 S.D.) 2013-2018. 2019 counts will be used when available.

ID	Agreement	Natural England	RSPB	MMO	Notes
2.6.9	Agreement on the PVA – Revised Sandwich tern breeding productivity to be used.	-	-	-	Sandwich tern breeding productivity from JNCC, 2019 (Mean 0.755 (0.195 S.D.) 2013-2018.
2.6.10	Agreement on the PVA – Revised Sandwich tern adult survival to be used.	-	-	-	Sandwich tern adult survival in Natural England PVA Tool = 0.898 (0.116 S.D.) (Horswill and Robinson, 2015) – though S.D. different?
2.6.11	Agreement on the PVA – Revised Sandwich tern juvenile survival to be used.	-	-	-	Sandwich tern juvenile survival in Natural England PVA Tool (Horswill and Robinson, 2015) = 0.358 S.D. 0.876 (age classes 0-1 and 1-2), 0.741 S.D. 0.824 (age class 2-3)
2.6.12	Agreement on the PVA output interpretation.	-	-	-	Counterfactual of the probability of population decline and counterfactual of the population growth rate.
<b>3 Agreement of mitigation measures and monitoring</b>					
3.1	Agreement of mitigation measures	-	-	-	
3.1.1	Agreement that the air gap has been considered in the design envelope in respect of minimising bird collision risk.	-	-	-	Increasing the air gap would be expected to reduce collision risk for most species. RHDHV will investigate the impact of different air gaps on collision risk.
3.2	Agreement of monitoring requirements	-	-	-	
<b>4 ETG4 10 August 2021</b>					
4.1	Natural England advice is that compensation for offshore ornithology mortalities should be based on upper CIs.	Agreed	-	n/a	
4.2	Natural England consider that sandwich tern collision risk assessment conclusions should be based on an avoidance rate of 98.6%.	Advice Retracted	-	n/a	Advice Retracted by Natural England on 21/10/2021 reverting to the use of SNCB 2014 advised rates
4.3	RHDHV will include sandwich tern collision risk results based on 99.3% avoidance	Agreed (with	-	n/a	

ID	Agreement	Natural England	RSPB	MMO	Notes
	rate as determined through the ECON meso avoidance behaviour demonstrated at SOW and DOW however the results of this will not form the basis of Natural England's conclusions (see 4.2 above).	recognition of above retracted advice)			
4.4	RHDHV will run the deterministic CRM (i.e. as calculated via the Band spreadsheets). The extended or stochastic CRMs will not be used.	Agreed	-	n/a	
4.5	RHDHV to use data up to 2019 for sandwich tern PVA calculations and refer to 2021 counts for context if they can be obtained.	Agreed	-	n/a	
4.6	Natural England consider that in terms of Harwood (2021), the "ESAS style" flight height distributions are the most appropriate for use in CRM, and are the most similar to Johnston et al. (2014) measurements	Agreed	-	n/a	
4.7	Cumulative and in-combination figures from Deadline 13 of East Anglia TWO and East Anglia ONE North Examination to be used for ES.	Agreed	-		Hornsea 4 figures will be updated to match the ES figures for that project since the PEIR figures were presented at Deadline 13 of the EA2/1N Examination.
4.8	Little gull to be included within the Information to Support Appropriate Assessment for Greater Wash SPA	Agreed	-	n/a	