



The Planning Inspectorate
Yr Arolygiaeth Gynllunio



REPORT on the IMPLICATIONS for EUROPEAN SITES

Proposed East Anglia TWO Offshore Windfarm

An Examining Authority report prepared with the
support of the Environmental Services Team

Planning Inspectorate Reference: EN010078

04 March 2021

[This page is intentionally left blank]



TABLE OF CONTENTS

1	INTRODUCTION	2
1.1	BACKGROUND	2
1.2	DOCUMENTS USED TO INFORM THIS RIES	3
1.3	STRUCTURE OF THIS RIES.....	4
2	OVERVIEW	5
2.1	EUROPEAN SITES CONSIDERED	5
2.2	HRA MATTERS CONSIDERED DURING THE EXAMINATION.....	5
3	LIKELY SIGNIFICANT EFFECTS	8
3.0	ASSESSMENT APPROACH	8
3.1	SUMMARY OF HRA SCREENING OUTCOMES DURING THE EXAMINATION	9
4	ADVERSE EFFECTS ON INTEGRITY	14
4.0	CONSERVATION OBJECTIVES.....	14
4.1	THE INTEGRITY TEST.....	14
4.2	EFFECTS ON OFFSHORE ORNITHOLOGY.....	15
4.3	EFFECTS ON MARINE MAMMALS	32
4.4	EFFECTS ON ONSHORE ORNITHOLOGY/ TERRESTRIAL ECOLOGY	37
5	ALTERNATIVES AND IROPI.....	42
6	COMPENSATORY MEASURES	43
7	SUMMARY	46
	ANNEX 1: MAIN DOCUMENTS REFERRED TO WITHIN THE RIES.....	49
	ANNEX 2: HRA INTEGRITY MATRICES	57

[This page is intentionally left blank]

1 INTRODUCTION

1.1 Background

- 1.1.1 East Anglia TWO Limited (the Applicant) has applied to the Secretary of State for Business, Energy and Industrial Strategy (SoSBEIS) for a Development Consent Order (DCO) under section 37 of the Planning Act 2008 (PA2008) for the proposed East Anglia TWO (EA2) Offshore Windfarm ('the Proposed Development'). The SoSBEIS has appointed an Examining Authority (ExA) to conduct an examination of the application, to report its findings and conclusions, and to make a recommendation to the SoSBEIS as to the decision to be made on the application.
- 1.1.2 Another simultaneous and separate application has been made for the East Anglia ONE North (EA1N) Offshore Windfarm. This application is for a separate offshore generating station and offshore transmission system, proposed to connect at a common landfall location. The two applications also propose to use a common onshore cable corridor and a common onshore transmission system connection point. This Report on the Implications for European Sites (RIES) refers to issues affecting the other application where they have a bearing on the matters covered by this RIES. This Report has been compiled specifically for the EA2 Offshore Windfarm, and therefore is marked with the blue icon as set out in the Examining Authority's Procedural Decision (PD) of 21 February 2020 [PD-006].
- 1.1.3 The SoSBEIS is the competent authority for the purposes of the Habitats Regulations¹ and the Offshore Marine Regulations² for energy infrastructure applications submitted under the PA2008 regime. The findings and conclusions on nature conservation issues reported by the ExA will assist the SoSBEIS in performing its duties under the Habitats Regulations and the Offshore Marine Regulations.
- 1.1.4 This RIES compiles, documents and signposts information provided within the DCO application, and the information submitted throughout the Examination by both the Applicant and Interested Parties, up to Issue Specific Hearing 9 of the Examination (19 February 2021) in relation to potential effects to European Sites³. It is not a standalone document and should be read in conjunction with the examination documents referred to. Where document references are presented in square brackets [] in the text of this report, that reference can be found in the Examination library

¹ The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations).

² The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) (the Offshore Marine Regulations) apply beyond UK territorial waters (12 nautical miles). These regulations are relevant when an application is submitted for an energy project in a renewable energy zone (except any part in relation to which the Scottish Ministers have functions).

³ The term European Sites in this context includes sites within the UK's national site network as defined in the Habitats Regulations, and Ramsar sites, which are included as a matter of Government policy. For a full description of the designations to which the Habitats Regulations apply, and/or are applied as a matter of Government policy, see the Planning Inspectorate's Advice Note 10.

published on the National Infrastructure Planning website at the following link:

[East Anglia TWO Examination Library](#)

- 1.1.5 It is issued to ensure that Interested Parties including the statutory nature conservation bodies: Joint Nature Conservation Committee (JNCC) and Natural England (NE) are consulted formally on Habitats Regulations matters. This process may be relied on by the Secretary of State for the purposes of Regulation 63(3) of the Habitats Regulations and Regulation 28(4) of the Offshore Marine Regulations. Following consultation, the responses will be considered by the ExA in making its recommendation to the Secretary of State and made available to the Secretary of State along with this report. The RIES will not be revised following consultation.
- 1.1.6 The Applicant has not identified adverse effects on European sites in any EEA States⁴ [APP-044]. Sites outside of the UK's national site network that were considered in the Applicant's screening exercise, are addressed in Section 3 of this report.

1.2 Documents used to inform this RIES

- 1.2.1 The documents used to inform this RIES are listed in Annex 1, which also sets out the documents in line with the chronology of the submission of the application, pre-examination, and examination.
- 1.2.2 The Applicant's DCO application concluded that there is the potential for likely significant effects on 24 European sites and therefore provided an Habitats Regulations Assessment (HRA) report entitled '5.3 Habitat Regulations Assessment - Information to Support Appropriate Assessment' [APP-043] with the DCO application, together with screening and integrity matrices ([APP-045] and [APP-046] respectively).

Examination

- 1.2.3 In response to the ExA's first written questions [PD-018], the Applicant submitted revised screening matrices at Deadline 1 [REP1-018] and a further updated version at Deadline 3 [REP3-016] in response to comments received from NE at Deadline 2 [REP2-057].
- 1.2.4 In addition to this and in response to matters raised, the Applicant provided material related to a 'without prejudice' derogations case within the time period of examination. This RIES includes reference to this material where relevant and applicable to its purpose.
- 1.2.5 In response to an action point raised at Issue Specific Hearing (ISH)³ on 19 January 2021 [EV-050], the Applicant confirmed [REP5-027] it did not consider that the introduction of changes to the Habitats Regulations 2017 through the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 had any material implications for its assessments. This

⁴ European Economic Area (EEA) States.

view was also expressed by NE following the matter being raised at ISH3 [REP5-089].

- 1.2.6 For those European sites and qualifying features where the Applicant's conclusions have been disputed or queried during the Examination, the matrices have been updated by the ExA, with the support of the Environmental Services Team of the Planning Inspectorate using the documents listed in Annex 1. The revised matrices are included as Annex 2 to this report.

1.3 Structure of this RIES

- 1.3.1 The remainder of this report is as follows:

- **Section 2** identifies the European site(s) that have been considered within the DCO application and during the examination period, up to Deadline 5. It provides an overview of the issues that have emerged during the Examination;
- **Section 3** identifies the European site(s) and qualifying feature(s) screened by the Applicant for potential likely significant effects, (either alone or in-combination with other projects and plans) together with any updates to the screening submitted during the Examination. This section also identifies where Interested Parties have disputed the Applicant's conclusions;
- **Section 4** identifies the European site(s) and qualifying feature(s) which have been considered in terms of adverse effects on integrity, either alone or in-combination with other projects and plans. The section identifies where Interested Parties have disputed the Applicant's conclusions;
- **Annex 1** provides a guide to the documents used to inform the RIES, set out as a list with key dates of the application and the Examination; and
- **Annex 2** comprises matrices for those European sites and qualifying features for which the Applicant's conclusions were disputed in relation to adverse effects on integrity of European sites.

2 OVERVIEW

2.1 European Sites Considered

- 2.1.1 The Proposed Development is not connected with or necessary to the management for nature conservation of any of the European site(s) considered within the Applicant's assessment [APP-044].
- 2.1.2 The Applicant undertook an initial Habitats Regulations Assessment (HRA) screening exercise which is reported in [APP-044]. The Applicant's approach to screening (including the approach to identifying sites/features with potential to be affected by the Proposed Development) is outlined in Chapter 2 of [APP-044].
- 2.1.3 The European sites that could be affected by the Proposed Development are listed in Tables 3.2, 4.2, 5.2, 6.2, 7.3, and 8.2 of the Applicant's HRA Screening Report [APP-044]. The potential for likely significant effects was only considered further where a potential pathway for effects could be identified for individual site features.
- 2.1.4 Table 9.1 of [APP-044] summarises the sites and features for which likely significant effects could not be excluded. The outcome of this screening exercise and the degree of agreement with Interested Parties is reported in Section 3 of this report. The Applicant's HRA Information to Support Appropriate Assessment Report [APP-043] reports on the reasoning and evidence the Applicant relied on to identify the potential for adverse effects on integrity of the sites and features where likely significant effects were identified. Section 4 of this report signposts the matters of examination relevant to the information to support the adverse effects on integrity assessment and signposts the relevant evidence of Interested Parties' positions on the conclusions of adverse effects and highlights where disagreement/ uncertainty remains.
- 2.1.5 As the detailed design of the Proposed Development has yet to be finalised, the zone of influence associated with the development was defined on the basis of design parameters which are stated in the Applicant's assessments to represent the maximum adverse scenario for each parameter. Decommissioning impacts are assumed to be similar to those predicted for construction. Sites which could be affected by the Proposed Development were initially identified using the criteria described in [APP-044]. During the course of the Examination, changes to some of these parameters have been adopted with the intention of mitigating adverse effects. These changes are addressed where relevant in Section 4 of this RIES.

2.2 HRA matters considered during the Examination

- 2.2.1 As set out in its HRA Integrity Matrices ([APP-046] updated at Deadline 3 [REP3-044]), the Applicant concluded that AEOI could be excluded for all of the sites and features carried through to Stage 2 of the assessment (both project alone and in-combination with other plans and projects). However, NE and other Interested Parties, including the Royal Society for

the Protection of Birds (RSPB) and The Wildlife Trusts (TWT), disputed these conclusions.

2.2.2 The sites and features where the Applicant’s conclusions regarding AEOI were disputed are listed in Table 2.0. The Examination therefore centred primarily on these points of disagreement and the reasons for disagreement.

Table 2.0: Sites and Features for which Applicant’s conclusions on AEOI were disputed during the Examination

Name of European Site	Features
Alde-Ore Estuary SPA and Ramsar	Lesser black-backed gull (breeding)
Flamborough and Filey Coast SPA	Gannet (breeding)
	Kittiwake (breeding)
	Razorbill (breeding)
	Guillemot (breeding)
	Seabird assemblage
Outer Thames Estuary SPA	Red-throated diver (non-breeding)
Sandlings SPA	Nightjar (breeding)
	Woodlark (breeding)
Southern North Sea SAC	Harbour porpoise

2.2.3 Other significant points which have been discussed in the Examination include:

- Assessment of displacement impacts (particularly in relation to red-throated diver (Outer Thames Estuary SPA) and the auk species which are features of the Flamborough and Filey Coast SPA);
- Collision Risk Modelling (CRM) (particularly in relation to the gannet and kittiwake features of the Flamborough and Filey Coast SPA and the lesser black-backed gull (LBBG) feature of Alde-Ore Estuary SPA and Ramsar) – choice of Band model and evidence supporting the Applicant’s parameterisation of the model;
- The approach to in-combination assessment for effects on seabird features;
- The scope of the screening assessment and clarification of discrepancies in the reporting of the screening exercise and the screening matrices submitted by the Applicant;



Report on the Implications for European Sites for East Anglia TWO Offshore Windfarm

- In-combination effects from underwater noise during construction on the harbour porpoise population of the Southern North Sea SAC and the form and securing mechanism of proposed mitigation measures;
- Avoidance and reduction of displacement effects on the red-throated diver qualifying feature of the Outer Thames Estuary SPA;
- Further design amendments, such as raising wind turbine generator draught height, as mitigation to address adverse effects on seabird features from collision;
- Construction methods and mitigation measures in relation to the crossing of the Sandlings SPA by the onshore cable route; and
- The feasibility, delivery, and details of compensation measures required to address AEOI if not excluded.



3 LIKELY SIGNIFICANT EFFECTS

3.0 Assessment approach

- 3.0.1 The Applicant’s Stage 1 HRA screening exercise is presented in the HRA Screening Report [APP-044]. The Applicant’s approach to screening (including the approach to identifying sites/ features with potential to be affected by the Proposed Development) is outlined in Section 2 (HRA Methodology [APP-044]).
- 3.0.2 A total of 185 European sites were identified and included in the screening stage; all sites are listed in Table 2.2 (Sites included in Screening) of Appendix 2 of the HRA Screening Matrices [APP-045]. Sites included at Stage 1 are also presented within a series of supporting figures in Annex 1 of the HRA Report (Figures 3 to 8.1c [APP-043]). Section 2.3 (Assessment of potential effects) of [APP-045] presents the screening matrices for each of the 185 sites and determines the risk of likely significant effects (LSE) on the relevant qualifying features of each site.
- 3.0.3 An additional eight sites for grey seal and an additional site for harbour seal were included in the screening assessment following consultation that determined that all designated sites within 100 km (based on the typical foraging range of grey seal and 80km average foraging range for harbour seal) should be included into the screening assessment [APP-043]. Additional SPA and Ramsar sites designated for overwintering wildfowl and waders were also included within the assessment post-screening on the basis that some of the designated species undertake seasonal migrations that may cross the EA2 wind farm array. This puts them at risk of collision therefore significant effects could not be ruled out (as stated in Paragraph 14 and listed in Table 2.2 of the HRA Report [APP-043]).

Table 3.0: Additional European Sites identified following consultation pre-application

Name of European Site	Features
Vlaamse Banken SAC	Grey seal Harbour Seal
Voordelta SAC	Grey seal
Voordelta SPA	Grey Seal
SBZ1 / ZPS 1 SPA	Grey Seal
SBZ2 / ZPS 2 SPA	Grey Seal
SBZ3 / ZPS 3 SPA	Grey Seal
Vlakte van de Raan SCI	Grey Seal
Bancs des Flandres SAC	Grey Seal
Vlakte van de Raan SAC	Grey Seal



Name of European Site	Features
Breydon Water SPA and Ramsar	Overwintering wildfowl and waders
Broadland SPA and Ramsar	Overwintering wildfowl and waders
North Norfolk Coast SPA and Ramsar	Overwintering wildfowl and waders

The assessment of in-combination effects

- 3.0.4 The Applicant has identified pathways for potential in-combination effects within its Stage 1 HRA Report [APP-044] in relation to onshore ornithology, offshore ornithology, and marine mammals. The Applicant’s approach to the in-combination assessment is outlined in Section 2.1.6 of section 2 (HRA Methodology) of the HRA Screening Report [APP-044]; Paragraph 61 of the HRA Screening Report [APP-044] confirms that the in-combination assessment presents relevant in-combination effects from projects using the six-tiered approach as devised by NE (Joint Nature Conservation Committee (JNCC) and Natural England, 2013)⁵ and as presented in Table 2.1 [APP-044]. Consultation responses presented in Table A2.3 [APP-047] show that NE expressed concern that the six-tier approach presented was too complicated, to which the Applicant responded that simplification has been considered but a decision was made to retain the approach. No further comments have been made on this point.
- 3.0.5 The Applicant’s HRA Report [APP-043] presents an assessment of in-combination effects for onshore ornithology (section 3), offshore ornithology (section 4), and marine mammals (section 5). The other plans and projects included in the in-combination assessments vary depending on the features assessed.
- 3.0.6 The other plans and projects, specifically other consented and operational wind farms, included in the in-combination assessment of effects on offshore ornithology features has been a matter of disagreement during the Examination and this is discussed within the sections below for the qualifying features/sites concerned.

3.1 Summary of HRA screening outcomes during the Examination

Sites and features screened at Stage 1

- 3.1.1 A number of sites presented in the HRA Screening Report [APP-044] were not present in the HRA Screening Matrices [APP-045]. In its First Written Questions (ExQ1) 1.2.3 of [PD-018]), the ExA highlighted that there were

⁵ Joint Nature Conservation Committee and Natural England. Suggested Tiers for Cumulative Impact Assessment, 12 September 2013. JNCC, Peterborough.

a number of sites (listed in Table 3.1) missing from the screening assessment and requested either justification for their omission or an updated screening assessment to include them. The ExA also noted at Question 1.2.4 that the footnotes in the HRA Screening Matrices [APP-045] do not refer to the specific paragraph numbers of the application documents in which the evidence can be found and requested that this was included in an updated screening assessment.

- 3.1.2 The Applicant subsequently submitted updated Information to support the Screening Matrices [REP1-018] with updated footnotes to include document and paragraph number references to the application materials where the evidence can be found and also included the 17 sites affected by discrepancies in its screening assessment identified by the ExA; these are listed in Table 3.1 below.

Table 3.1: European Sites affected by discrepancies identified by the ExA with the Applicant’s HRA Documents

Name of European Site	Features
Plymouth Sound and Estuaries SAC	Fish Benthic habitats (see Page 162 of [REP1-018])
Severn Estuary SAC	Fish Benthic habitats (see Page 184 of [REP1-018])
River Avon SAC	Fish (see Page 171 of [REP1-018])
Havet Omkring Nordre Ronner SAC (designation not stated in Applicant’s report)	Grey seal Harbour seal
Knudegrund SAC	Harbour porpoise
Lønstrup Rødgrund SAC	Harbour porpoise
Sandbanker ud for Thorsminde SAC	Harbour porpoise
Sandbanker ud for Thyboron SAC	Harbour porpoise
Thyboron Stenvolde SCI	Common porpoise
Littoral Cauchois SAC	Benthic habitats (see Page 116 of [REP1-018])
Panache De La Gironde Et Plateau Rocheaux De Cordouan (Systeme Pertuis Gironde) SAC	Marine mammals Fish Benthic habitats (see Page 154 of [REP1-018])

Name of European Site	Features
Pertuis Charentais SAC	Marine mammals Fish Benthic habitats (see Page 160 of [REP1-018])
Mühlenberger Loch SPA	Marine mammals Fish Benthic habitats (see Page 135 of [REP1-018])
Schleswig-Holsteinisches Elbastuar und angrenzende Flächen SAC	Marine mammals Fish Benthic habitats (see Page 180 of [REP1-018])
Unternelbe SCI	Fish (see Page 206 of [REP1-018])
Hamford Water SPA	Waterbird assemblage Breeding little tern
Hamford Water Ramsar	Waterbird assemblage Breeding little tern

- 3.1.3 The Screening Matrices [APP-045] numbers the sites 1 to 185. However, it was also noted that there are a number of sites that hold multiple designations (for example, sites that are covered by both an SPA and Ramsar designation) that have been grouped together. The ExA's First Written Question 1.2.5 [PD-018] noted that Ramsars and SPAs had been combined in the HRA Screening Report [APP-044] and requested the Applicant explain this approach and whether this had been agreed with NE. In its response [REP1-159] NE confirmed that the draft Statement of Common Ground (SoCG) [REP1-058] between the Applicant and NE states that this approach has been agreed. NE does not explicitly confirm that it is satisfied that the correct sites and features have been identified in the Applicant's HRA screening assessment, it confirms that it agreed with the scope and conclusions of the HRA Screening assessment (response to ExQ1 1.2.6, [REP1-159]).
- 3.1.4 NE [REP2-057] highlights that whilst it does not contest the conclusions of the screening assessment, some of the features and reasoning within the screening matrices [REP1-018] are incorrect. Following this, the Applicant submitted an updated 'Information to Support Appropriate Assessment Screening Matrices' [REP3-016] to reflect the correct features and reasoning.

- 3.1.5 NE [RR-059] referred to Table 12.37 of ES Appendix 12.3 (Information for the Cumulative Assessment [APP-471]) and suggested that a number of existing and operational offshore wind farms have been excluded from the Applicant's in-combination assessment. NE's comments related to concerns around subsequent underestimation of the effects on offshore ornithology, and the implications of this for the Stage 2 assessment. This matter is discussed further in Section 4 of this RIES. The approach to in-combination assessment as far as it has bearing on the screening for likely significant effects (LSE) (Stage 1 assessment) was not disputed.
- 3.1.6 As a result of the screening assessment [APP-044], the Applicant concluded that the Proposed Development is **likely to give rise to significant effects**, either alone or in-combination with other projects or plans, on the qualifying features of the European site(s) listed in Table 3.2.

Table 3.2 Sites and features screened into Stage 2 of the HRA by the Applicant

Name of European Site	Features
Sandlings SPA	Nightjar (breeding)
	Woodlark (breeding)
Outer Thames Estuary SPA	Red-throated diver
Greater Wash SPA	Red-throated diver
	Little gull
Alde-Ore Estuary SPA and Ramsar	Lesser black-backed gull
Breydon Water SPA and Ramsar	Overwintering wildfowl and waders
Broadland SPA and Ramsar	Overwintering wildfowl and waders
North Norfolk Coast SPA and Ramsar	Overwintering wildfowl and waders
	Gannet
	Kittiwake
	Razorbill
	Guillemot
Southern North Sea SAC	Seabird assemblage
	Harbour porpoise
The Wash and North Norfolk Coast SAC	Harbour seal
Humber Estuary SAC	Grey seal

Name of European Site	Features
Vlaamse Banken SAC	Grey seal
SBZ 1 / ZPS 1 SPA	Grey seal
SBZ 2 / ZPS 2 SPA	Grey seal
SBZ 3 / ZPS 3 SPA	Grey seal
Vlakte van de Raan SCI	Grey seal
Bancs des Flandres SAC	Grey seal
Vlakte van de Raan SAC	Grey seal
Voordelta SAC and SPA	Grey seal

- 3.1.7 The Applicant’s conclusion of likely significant effects on those European sites and their qualifying features identified in Table 3.2 **were not disputed** by any Interested Parties during the Examination. No concerns were raised by NE in their relevant representation [RR-057] regarding the sites and features for which no LSE was concluded, however as noted above, NE did provide comments on the updated screening exercise [REP1-018] at Deadline 2 [REP2-057]. No other party raised concerns about the screening assessment.
- 3.1.8 The European sites carried forward to consideration of adverse effects on site integrity are summarised in Section 4 of this report.



4 ADVERSE EFFECTS ON INTEGRITY

4.0 Conservation Objectives

4.0.1 The Applicant's Information to Support Appropriate Assessment [APP-043] did not provide conservation objectives for the following sites that were carried through to Stage 2 of the assessment:

- Breydon Water SPA;
- Broadland SPA; and
- North Norfolk Coast SPA.

4.0.2 The Applicant was requested to provide the conservation objectives for these sites and explain how those conservation objectives have been considered in its assessment (ExQ1 1.2.7 [PD-018]). The Applicant submitted the requested conservation objectives at Deadline 1 [REP1-107]. As noted in Section 3 in relation to the assessment of LSE, concurrent Ramsar sites and SPAs have also been combined in the Applicant's HRA Information to Support Appropriate Assessment Report [APP-043], and this approach has been agreed with NE [REP1-058].

4.0.3 NE has advised that it is unable to conclude no AEOI on the Outer Thames Estuary SPA and its qualifying feature, red-throated diver (RTD) on the grounds that the Proposed Development would undermine the conservation objectives of the SPA. This matter was discussed during the Examination and at Deadline 4, NE submitted its 'Legal Submission on RTD Displacement within OTE SPA' [REP4-089]. Further detail is provided in Paragraph 4.2.19 of this report.

4.1 The Integrity Test

No Adverse Effect on Integrity

4.1.1 The Applicant concluded [APP-043, APP-046] that the Proposed Development will not result in AEOI of the following European sites that were carried through to Stage 2 of the assessment:

- Greater Wash SPA;
- Breydon Water SPA and Ramsar;
- Broadland SPA and Ramsar;
- North Norfolk Coast SPA and Ramsar;
- The Wash and North Norfolk Coast SAC;
- Humber Estuary SAC;
- Vlaamse Banken SAC;
- Voordelta SAC and SPA;

- SBZ 1 / ZPS 1 SPA;
 - SBZ 2 / ZPS 2 SPA;
 - SBZ 3 / ZPS 3 SPA;
 - Vlake van de Raan SCI;
 - Bancs des Flandres SAC;
 - Vlake van de Raan SAC; and
 - Voordelta SAC and SPA.
- 4.1.2 Neither NE, nor other Interested Parties, have raised any concerns in relation to the Applicant's conclusions for these sites and features [REP3-117, REP1-058].
- 4.1.3 The Applicant also concluded no AEOI for the following sites:
- Alde-Ore Estuary SPA and Ramsar;
 - Flamborough and Filey Coast SPA;
 - Outer Thames Estuary SPA;
 - Sandlings SPA; and
 - Southern North Sea SAC.
- 4.1.4 The Applicant's conclusion of no AEOI in relation to the European sites listed in Paragraph 4.1.3 and their qualifying features where LSE were identified is disputed by Interested Parties at the time of writing. The account of the examination of these matters is set out in the following sections.

4.2 Effects on Offshore Ornithology

Introduction

- 4.2.1 The Applicant concludes in its HRA Information to Support Appropriate Assessment Report [APP-043] that there would be no AEOI on any of the designated sites and offshore ornithological features identified in Table 2.1 and Table 2.2 of [APP-043] and carried through to Stage 2 of the assessment.
- 4.2.2 At the current point in the Examination, NE is not satisfied that it can be excluded beyond reasonable scientific doubt that the Proposed Development would have an adverse effect in-combination on the integrity of the designated sites and their ornithological features shown in Table 4.0.
- 4.2.3 At [REP5-089], NE agreed to conclude no AEOI in relation to project alone displacement impacts on the red-throated diver (RTD) feature of the Outer Thames Estuary SPA (OTE SPA). However, due to its continued concerns regarding the Applicant's assessment methodology, NE states that its

position remains fluid in respect to this matter [REP5-089]. Further detail is provided in Paragraph 4.2.18 of this RIES.

- 4.2.4 The Applicant’s assessment concluded that AEOI could be excluded in relation to operational displacement effects in-combination with other plans and projects on gannet [APP-043 and APP-046]. NE agree with the methodology of the assessment, however, did not agree with these conclusions with regards to the EIA and is recorded as in discussion in relation to AEOI in the SoCG between NE and the Applicant [REP1-058]. However, in-combination displacement effects on gannet have not been raised as a concern with regards to the conclusions against AEOI by NE in REP5-083 or REP5-088.

Table 4.0: Ornithological features for which outstanding HRA concerns remain (all matters).

Designated site	Ornithological feature	Collision		Displacement
		In-combination	Project-alone	In-combination
Outer Thames Estuary SPA	Red-throated diver (RTD)			✓
Flamborough and Filey Coast SPA	Kittiwake	✓		
	Gannet	✓	*	
	Guillemot			✓
	Razorbill			✓
	Seabird assemblage	✓		✓
Alde-Ore Estuary SPA	Lesser black-backed gull (LBBG)	✓		

*The RSPB has maintained that it cannot exclude AEOI on the gannet feature of the Flamborough and Filey Coast SPA due to collision risk from the Proposed Development alone [RR-067] and [REP4-097].

- 4.2.5 These sites and features were key matters discussed during the Examination.
- 4.2.6 This section of the RIES sets out the broader concerns and points of disagreement regarding the Applicant’s general approach to the assessment of effects in relation to displacement (project alone or in-combination), collision risk (gannet alone or in-combination, other qualifying features in-combination), and post-consent monitoring. Within these overarching topics / issues, the relevant designated sites and ornithological features are discussed.

Assessment of displacement (project-alone or in-combination)

- 4.2.7 As presented in Table 4.1, NE does not agree to conclude no AEOI of the designated sites and ornithological features due to in-combination

displacement impacts. As discussed in detail in Paragraphs 4.2.13 to 4.2.19 of this RIES, NE's position also remains fluid in relation to project alone displacement impacts on the RTD feature of the OTE SPA.

Table 4.1 Ornithological features for which outstanding HRA concerns remain (displacement).

Designated site	Ornithological feature	In-combination
Flamborough and Filey Coast SPA	Guillemot	✓
	Razorbill	✓
	Seabird assemblage	✓
Outer Thames Estuary SPA	Red-throated diver (RTD)	✓

Outer Thames Estuary SPA – Red-Throated Diver (RTD)

RTD - assessment of displacement (overview)

4.2.8 One of the main offshore ornithology matters considered during the Examination has been the adverse effects on non-breeding red-throated diver (RTD), the qualifying feature of the Outer Thames Estuary (OTE) SPA, due to disturbance and displacement impacts; both project alone or in-combination with other plans and projects.

4.2.9 The Applicant's conclusion is that there would be no AEOI on the RTD qualifying feature of the OTE SPA (either project alone or in-combination) in relation to the following activities:

- Offshore cable laying activities (construction);
- Vessel traffic associated with site maintenance (operation); and
- Presence and operation of the turbines (construction and operation).

4.2.10 **Offshore cable laying activities:** The Applicant's Information to Support Appropriate Assessment Report [APP-043] identified the potential for disturbance and displacement of non-breeding RTD resulting from the presence of up to two cable laying vessels installing the export cable through the OTE SPA. The Applicant sets out its approach to the assessment of displacement of RTD by offshore cable laying activity in Paragraph 4.3.1.2.2 of [APP-043]. NE confirms that the Applicant's assumption of a 100% RTD displacement within a 2km buffer around the cable laying vessel is a reasonable approach and that whilst NE considers that the level of displacement would be significant, NE acknowledges that the displacement would be short-term [RR-059]. Therefore, given the temporary nature of the cable laying operations, NE agrees that there is likely to be no AEOI alone as a result of RTD displacement due to cable laying [RR-059]. However, NE states at [RR-059] that it is "*unable to rule out AEOI in-combination with displacement*" and recommends that a seasonal restriction in cable laying activity should be put in place. Cable laying is anticipated to take a total of 110 days to complete (identified in paragraph 213 of [APP-043]). NE therefore recommends that the activities

are carried out during the part of the year when RTD are not present in order to reduce displacement risks associated with this activity [RR-059]. The Applicant responded at Deadline 5 [REP5-015] to state that it would address these points in an update to the submitted Best Practice Protocol (BPP) [REP3-074] at Deadline 6. The BPP is discussed in further detail in Paragraph 4.2.31 of this RIES.

- 4.2.11 **Vessel traffic associated with site maintenance:** The operation of the site will necessitate an increase in the number of vessel journeys through the OTE SPA, involving both boats and helicopters [APP-043]. The approach to the Applicant's assessment and quantification of vessel traffic associated with operational site maintenance, including worst-case scenarios in relation to maximum anticipated vessel and helicopter movements, is set out in Chapter 4 and Table 4.1 of [APP-043]. To minimise vessel traffic in the wider area, the Applicant confirms that, where possible, vessels will follow established shipping routes between the Proposed Development and the relevant ports [APP-043]. At [RR-059], NE commented that the Applicant has not appropriately considered the impacts of increased operational vessel and helicopter activity on RTD and given that both have the potential to disturb RTD, NE advised that the impacts of these activities need to be assessed and where appropriate, mitigated. At its response to Examining Authority Written Questions (ExQ1) 1.2.10 [PD-018], NE was questioned in relation to OTE SPA operation and maintenance vessel traffic and asked to comment on whether adequate safeguards against RTD disturbance are secured in the Best Practice Protocol (BPP) [REP3-074] in the event that helicopters are used for maintenance activities. The BPP and NE's comments are discussed in further detail in Paragraph 4.2.24 of this RIES.
- 4.2.12 **Proposed array area:** NE does not agree with the conclusion of no AEOI in relation to in-combination displacement effects for the RTD feature of the OTE SPA in relation to impacts arising from the proposed array area [RR-059] and this point of disagreement was one of the key matters discussed during the Examination. As discussed in detail in Paragraphs 4.2.12 to 4.2.18 below, NE states that its position also remains fluid in relation to project alone displacement impacts on the RTD feature of the OTE SPA.

RTD – extent of displacement effects from the array (project alone)

- 4.2.13 The EA2 wind farm does not overlap the OTE SPA and since the time of the Preliminary Environmental Information Report (PEIR) consultation, in response to concerns raised by NE, the EA2 boundary has been amended and is now located 8.3km from the OTE SPA boundary [APP-043 and RR-059]. To determine the impact of displacement from EA2 alone, the Applicant considered displacement effects extending 4km from the proposed array area [APP-043]. Based on NE guidance at the time of the assessment, the Applicant assumed between 90 to 100% of RTD may be displaced from within a wind farm and surrounding 4km buffer. It was therefore determined by the Applicant that there is potential for birds in this region of the SPA to be displaced and to suffer mortality of between 1 to 10% [APP-043].

- 4.2.14 At [RR-059], NE welcomes that the re-configured array is now 8.3km from the boundary of the OTE SPA. NE notes, however, based on studies at other wind farms, the extent of RTD displacement is likely to exceed 8km. NE pointed to a growing body of evidence that suggests that RTD may be displaced at greater distances than 10km from the areas of sea within offshore wind farms and from the waters in their vicinity [RR-059]. NE calculates that when a 10km buffer is applied around the array, the overlap with the OTE SPA is 4.4km² [RR-059]. Therefore, NE argues that, without modification, the Proposed Development would potentially change the local distribution and abundance of RTD in this section of the OTE SPA, which NE notes would not be consistent with fulfilling the Conservation Objectives for the OTE SPA (as detailed in Section 4.3 of [APP-043]). At Deadline 1, NE submitted its recommended approach to assessing and mitigating displacement effects on RTD from the OTE SPA [REP1-172], which advised that to address the risk of adverse impacts on the SPA, the boundary of EA2 is amended so that no part of the array is within 10km of the boundary of the OTE SPA.
- 4.2.15 At Deadline 3 [REP3-049], the Applicant submitted an updated assessment and analysis of RTD displacement that considered a 10km buffer from the Proposed Development to the OTE SPA. [REP3-049] states that results of this updated assessment were presented to NE, RSPB, and the Marine Management Organisation (MMO) at a workshop held on the 28 July 2020. The Applicant states that it was agreed at that workshop that the Applicant would further revise the assessment to consider displacement out to 12.5km using 1km increments. Furthermore, NE requested modelling of the distribution of RTD from the available survey data for the OTE SPA to investigate how existing wind farms have affected these distributions [REP3-049].
- 4.2.16 At [REP4-087], NE expressed concern in respect of the Applicant's modelling approach, specifically in relation to the "*inclusion of aerial surveys without corrections for observer bias, application of shipping lane data and pseudo-replication for spatial and temporal parameters*". NE argues that such "*fundamental issues regarding the Applicant's modelling approach*" means that the Applicant's conclusion of displacement up to 7km is likely to be an underestimate. NE acknowledges that there will not be complete avoidance within the buffer, instead there is a gradual decline in displacement with increased distance from the wind farm. However, NE suggests that the area affected is significant whether the displacement is 7km, as proposed by the Applicant's modelling, or 11.5km as predicted by the London Array monitoring [REP4-087]. NE argues that the conclusions in Tables 5, 7 and 10 of [REP3-049] are unreliable because the Applicant is basing its conclusions on a modelling approach that requires further consideration and validation. NE states at [REP4-087] that until the modelling approach has been validated and the issues around treatment of the visual aerial surveys have been addressed, it cannot agree with the Applicant's conclusions.
- 4.2.17 At Deadline 5, the Applicant provided an updated assessment of its Deadline 3 submission regarding RTD displacement in the OTE in response

to NE's Deadline 4 comments [REP5-025]. The Applicant's response to [REP4-087] in [REP5-015] drew from its updated RTD assessment and responds to NE's comments about the methodology and modelling approach for the assessment of displacement.

4.2.18 [REP5-015] summarises the Applicant's review of available literature that has described RTD displacement by offshore wind farms. The Applicant reports that its analysis for the OTE SPA shows that RTD avoidance occurs over a much shorter range, with densities approaching background (i.e. unaffected) levels by 7km from offshore wind farms, which the Applicant believes is a "*clear indication that results obtained in one region are not automatically transferable to others*" [REP5-025]. In applying a 4km buffer, combined with an assumption of 100% RTD displacement, the Applicant argues that the worst-case has been assessed and that application of a larger buffer of complete avoidance (e.g. up to 10km) is not supported by the current analysis and "*would result in over-estimating the potential displacement effects*". Based on its review of available literature, the Applicant concludes that "*available evidence suggests that the most likely result of displacement is that there will be little or no impact on adult survival, and that any impact would probably be undetectable at the population level. Indeed, there is very little evidence to support the upper range of mortality effects for displaced birds advised by Natural England (e.g. up to 10%), and on the basis of a review of the studies (Vattenfall 2019), even an additional mortality rate of 1% is considered precautionary*". The Applicant's response therefore concludes that the magnitude and extent of displacement has not been underestimated and that a displacement distance of 7 to 8km is supported by the available evidence.

4.2.19 At [REP5-089], in its written summary of oral representations made at ISH 3, NE reiterated its pre-application concerns regarding the boundary of EA2 but states that now that the Proposed Development has been moved (following its comments at PEIR stage) to provide an 8.3km buffer between EA2 and the OTE SPA, an AEOI alone for EA2 can be ruled out. However, at [REP4-087] and [REP5-089] NE disagrees with the Applicant's position that there will be no displacement from EA2 and maintains that there are fundamental issues regarding the Applicant's modelling approach that should be addressed before effects from EA2 can be fully ruled out. NE therefore states that its "*position remains fluid*" until issues around the modelling have been addressed. The Applicant indicated that it would make further submissions on this matter at Deadline 6.

RTD – assessment of displacement (in-combination)

4.2.20 NE does not agree to conclude no AEOI in relation to RTD displacement in combination with other plans and projects and the Applicant's approach to the in-combination assessment remains a matter of disagreement. NE advised at Deadline 1 [REP1-172] and again at Deadline 4 [REP4-087] that the assessment of in-combination displacement effects on RTD should include all projects not constructed at the time of the SPA surveys on which notification was based, ie projects constructed after 2002-2008.

4.2.21 At [RR-059], NE advised that the Applicant's in-combination operational displacement assessment totals for RTD are based on an incomplete data set. NE refers to Table 12.37 of ES Appendix 12.3 (Information for the Cumulative Assessment [APP-471]) and suggests that the following existing and operational offshore wind farms have been excluded from the Applicant's in-combination assessment:

- Gunfleet Sands;
- Kentish Flats;
- Kentish Flats Extension;
- London Array; and
- Scroby Sands.

4.2.22 NE argues that excluding these projects reduces confidence in the in-combination assessments because the assessments include assumptions that may not reflect the full extent of RTD displacement, which will result in a significant underestimate of impacts [RR-059].

4.2.23 At Deadline 3 [REP3-049] and Deadline 5 [REP5-025], the Applicant provided updated assessments of RTD in the OTE SPA. At [REP5-025], the Applicant argued that several of the wind farms suggested by NE as sources of displacement were in operation prior to designation of the OTE SPA (in August 2010), or were operational before the 2018 surveys for the revised population estimate for the OTE SPA were conducted (as detailed in Table 9 of [REP5-025]). Furthermore, the Applicant states that Kentish Flats, Gunfleet Sands, Thanet and Greater Gabbard were also fully operational prior to the surveys conducted in 2013 (Table 9, [REP5-025]).

4.2.24 There is ongoing dispute between the Applicant and NE regarding the existing operational wind farms identified above and whether it is appropriate for these projects to be excluded from the Applicant's in-combination assessment of operational displacement of RTD.

RTD displacement implication for OTE SPA conservation objectives

4.2.25 The conservation objectives for the OTE SPA are set out at Paragraph 78 of the Applicant's 'Displacement of red throated divers in the Outer Thames Estuary SPA' [REP3-049, updated by REP5-025]. In [REP4-089], NE states that all of the objectives are relevant and must be kept in view in an appropriate assessment. However, discussion during the Examination has centred mainly on objective (d) and objective (e), which relate to "(d) *maintaining or restoring...the populations of each of the qualifying features* [i.e. abundance] and (e) *the distribution of qualifying features within the site* [i.e. distribution]".

4.2.26 In addition to predicted displacement effects from the Proposed Development that NE argue would undermine the conservation objectives of the OTE SPA, at [REP5-089], NE reiterates its view that ongoing displacement impacts from existing wind farm projects are resulting in the OTE SPA being in unfavourable condition, and that there is already an AEOI occurring.

- 4.2.27 Since NE does not agree with the Applicant's position on the magnitude and extent of the displacement effects, the effect on the abundance of RTD is disputed. In light of this uncertainty, NE cannot agree that the effects on conservation objective (d) do not amount to an AEOI.
- 4.2.28 NE [REP4-087] also expresses concern that the location of the EA2 array is likely to cause displacement effects that will result in changes in distribution and a reduction in the availability of RTD in part of the SPA. NE argues that a change in the distribution of divers within OTE SPA is incompatible with meeting objective (e) and will result in an AEOI, either alone or in-combination with other plans and projects.
- 4.2.29 At [REP5-025], given the distance of the Proposed Development (ie 8.3km) from the boundary of the OTE SPA, and on the basis of the modelling presented in its report that finds that RTD displacement declines to zero by 7km [REP5-025], the Applicant concludes that there will be no disturbance upon the RTD population of the OTE SPA and no displacement effect and resultant change in distribution (project alone or in-combination with other plans and projects). Table 11 at [REP5-025] presents the Applicant's summary of assessment for EA2 of potential effects on the RTD feature in relation to each of the individual conservation objectives (ie objectives (a) to (e)) of the OTE SPA. The Applicant concludes no AEOI in relation to all conservation objectives of the OTE SPA, for both the project alone and in-combination with other plans and projects.
- 4.2.30 NE raised a series of technical concerns regarding the Applicant's revised approach to assessing RTD during ISH2 on 02 December 2020 [EV-034g to EV034K]. NE maintained its position that it could not agree no AEOI for EA2 in-combination with other plans and projects and that its position remains fluid in respect to project alone AEOI [REP5-089]. NE does not agree with the Applicant's interpretation of the OTE SPA conservation objectives and therefore set out its legal submission in Deadline 4 [REP4-089] (Appendix A14 Legal Submission on RTD Displacement within OTE SPA). This document outlines areas of law in the RTD Assessment that NE argue has led the Applicant to draw incorrect conclusions on the absence of AEOI, including around the Applicant's interpretation of the Conservation Objectives of the OTE SPA) in Section 4 and 5 of the Displacement of RTD in the OTE SPA document [REP3-049]. At ISH3, the Applicant indicated that it did not agree with matters raised within NE's legal submissions and stated that it planned to provide its own legal submissions at Deadline 6.

RTD - mitigation

- 4.2.31 The Applicant submitted a 'Best Practice Protocol (BPP) for minimising disturbance to Red-Throated Diver' for the Proposed Development at Deadline 3 [REP3-074]. NE provided interim comments on the BPP at Deadline 4 [REP4-087] in which it welcomed the Applicant's submission of the document [REP3-074] but suggested that additional detail should be included regarding the control of vessel movements during seasonally sensitive periods prior to its adoption as a Project Environmental Management Plan (PEMP). The content of the BPP was discussed at ISH3

[EV-046]. The Applicant responded at Deadline 5 [REP5-015] to state that it would address these points in an update to the BPP at Deadline 6.

Flamborough and Filey Coast SPA – auks (guillemot and razorbill) and seabird assemblage

- 4.2.32 The seabird assemblage feature of the FFC SPA comprises gannet, fulmar, kittiwake, guillemot, razorbill, puffin, herring gull, shag and cormorant [REP2-006]. At [REP2-006], the Applicant confirms that four of these species have been assessed as individual named features (i.e. gannet, kittiwake, razorbill and guillemot) as detailed in sections 4.6.1, 4.6.2, 4.6.3 and 4.6.4 of the Information to Support Appropriate Assessment Report [APP-043], respectively. At Paragraph 7 of [REP2-006], the Applicant lists the remaining assemblage species (i.e. herring gull, shag, cormorant, fulmar and puffin) and details the reasons as to why it considers that there is no pathway for effect.
- 4.2.33 The Applicant concludes that there will be no AEOI of the FFC SPA in relation to any of the qualifying features that comprise the seabird assemblage due to the Proposed Development alone or in-combination with other plans or projects [APP-043 and APP-046]. Given that the Applicant concludes no AEOI in relation to any of the individual components of the seabird assemblage feature, the Applicant concludes that there will be no risk of AEOI on the seabird assemblage feature itself [REP2-006].
- 4.2.34 NE has concluded that an AEOI cannot be ruled out in respect of the kittiwake, gannet, guillemot and razorbill features of the FFC SPA [RR-059]. This is also the position of the RSPB across all SPA sites on the basis of the incremental effects on the conservation status successive wind farms on seabird species. The RSPB has also maintained that it cannot exclude AEOI on gannet due to collision risk from the Proposed Development alone [RR-067 and REP4-097].
- 4.2.35 In addition to the remaining concerns of NE and the RSPB on the approaches taken to CRM (as set out in Paragraph 4.2.42 of this report), there are also specific concerns relating to the in-combination assessment of displacement for auk features of the site (i.e. razorbill and guillemot), which are described in this section.

In-combination displacement – auk (razorbill and guillemot) and seabird assemblage

- 4.2.36 In its RR [RR-059], NE advised that the in-combination auk (i.e. razorbill and guillemot) operational displacement totals are based on an incomplete dataset. NE stated that the Applicant has missed several existing offshore wind farms from the scope of the in-combination assessment, including:
- Beatrice Demonstrator;
 - Gunfleet Sands;
 - Kentish Flats;

- Methil;
- Rampion; and
- Scroby Sands.

4.2.37 Due to the exclusion of these projects, NE states that it is unable to rule out AEOI for in-combination operational displacement on razorbill or guillemot of the FFC SPA [RR-059 and AS-036].

4.2.38 At Deadline 2, the Applicant provided updated in-combination displacement tables for guillemot and razorbill (auks) to address comments from NE regarding the approach to in-combination assessment for both EA2 and EA1N [REP2-006].

4.2.39 The Applicant notes in its comments on the NE RR [AS-036] that there are no data for the Beatrice Demonstrator project and Scroby Sands for either species [REP2-006]. For Kentish Flats and Kentish Flats Extension, there are no data for razorbill. However, displacement estimates are available for Rampion, Methil and Gunfleet Sands (both features) and for guillemot for Kentish Flats and Kentish Flats Extension. Where estimates are available, the Applicant confirmed that these have been included in updated in-combination assessment presented in the 'Cumulative Auk Displacement and Seabird Assemblage Assessment of FFC SPA and Gannet PVA' [REP2-006] for guillemot (Table 1) and razorbill (Table 2). Where no data are available, the Applicant states that the wind farm has been added to the table for completeness, but without any estimate.

4.2.40 The Applicant states in [REP2-006] that estimates used are the positions agreed with NE from the Norfolk Boreas Deadline 2 submission (Norfolk Boreas, 2019) but with Thanet Extension removed following its refusal of consent. The Applicant concludes overall that the updates presented do not alter the conclusions of no AEOI for the HRA within the assessments submitted (Chapter 12 Offshore Ornithology [APP-060] and the Information to Support Appropriate Assessment Report [APP-043]).

4.2.41 At Deadline 3 [REP3-116], NE stated that it welcomed the update to the in-combination displacement tables for guillemot and razorbill with the inclusion of offshore wind farms that were previously missing from the assessments and noted the limitations and lack of available data.

4.2.42 However, NE pointed to its "*final advice*" that it provided during the Norfolk Boreas Examination, which is that it is not in a position to advise that an AEOI could be ruled out for the guillemot and razorbill features of the FFC SPA for displacement in-combination with other plans and projects when the Hornsea Project Three and Hornsea Project Four projects are included in the in-combination totals [REP3-116].

Assessment of Collision Risk (in-combination)

4.2.43 As presented in Table 4.2, at the beginning of the Examination, NE did not agree to conclude no AEOI of the following designated sites and ornithological features due to in-combination collision impacts:

Table 4.2 Ornithological features for which outstanding HRA concerns remain (collision risk).

Designated site	Features for which outstanding HRA concerns remain	In-combination	Project alone
Flamborough and Filey Coast SPA	Kittiwake	✓ <i>including or excluding Hornsea Project Three and Hornsea Project Four</i>	
	Gannet	✓ <i>when Hornsea Project Three and Hornsea Project Four are included</i>	*
Alde-Ore Estuary SPA	Lesser black-backed gull	✓	

*The RSPB has maintained that it cannot exclude AEOI on gannet due to collision risk from the Proposed Development alone [RR-067 and REP4-097].

Collision Risk Modelling (CRM) – model used

4.2.44 The Applicant has undertaken assessment of collision risk using Option 2 of the Band (2012) CRM. This model was used to generate collision risk estimates for the following ornithological features across biological seasons and annually:

- Kittiwake (breeding) (FFC SPA);
- Gannet (breeding) (FFC SPA); and
- Lesser black-backed gull (breeding) (Alde-Ore Estuary SPA).

4.2.45 CRM Option 2 uses generic estimates of flight height for each ornithological feature based on the percentage of birds flying at Potential Collision Height derived from data from a number of offshore wind farm sites [APP-060].

- For gannet, CRM was run with nocturnal activity factors of 25% (standard), 0% reduced, and evidence-based seasonal rates (8% in breeding season months and 4% in non-breeding season months; Furness et al. 2018b); and
- For kittiwake and LBBG, CRM was run with standard (50%) and reduced (25%) nocturnal activity factors.

4.2.46 The input parameters are provided in Technical Appendix 12.2 Annex 3 of ES Chapter 12 Offshore Ornithology [APP-470] and complete CRM results for each ornithological feature are provided in Technical Appendix 12.2 Annexes 4 and 7 [APP-060]. [APP-470] also provides collision estimates for each feature using Band CRM Option 1.

4.2.47 In its RR [RR-059], NE acknowledges that it has previously raised concerns regarding the Applicant’s use of CRM Option 2 (based on the use of generic flight heights) in its main assessment to model and predict collision risk. NE previously stated that the use of CRM Option 1 (based on the use of

site-specific flight height data) predicts significantly higher bird mortality than outputs from Option 2. NE therefore recommended that the Applicant applied a more precautionary approach to the assessment by adopting Option 1 outputs in order to ensure worst-case scenario bird mortality (through collision) is accounted for in the HRA assessment [RR-059].

- 4.2.48 However, both NE [RR-059] and the Applicant [AS-036] confirms that the use of CRM Option 2 has now been agreed in consultation with NE and the RSPB through the Evidence Plan Process (see Appendix 12.1 of Chapter 12 Offshore Ornithology [APP-060]) following advice from the digital aerial surveyor that the previously proposed method to estimate seabird flight height was insufficiently robust to be relied upon for use in the site specific (i.e. CRM Option 1) version of the Band model. Consequently, it was agreed between the Applicant and relevant stakeholders that the Option 1 collision estimates should not be used in the assessment [AS-036].

Updates to Collision Risk Modelling

- 4.2.49 The Applicant submitted updated collision risk estimates for EA2 and EA1N at Deadline 1 [REP1-047] and Deadline 4 [REP4-042].
- 4.2.50 The most recent estimates were calculated following the 2m increase in draught height for the Proposed Development (see section 4.2.64).
- 4.2.51 The Applicant undertook calculations for the following species that did not have very low (≤ 3) predicted collision mortalities:
- Kittiwake (FFC SPA);
 - Gannet (FFC SPA); and
 - Lesser black-backed gull (Alde-Ore Estuary SPA).
- 4.2.52 LBBG were included due to the potential connectivity with the Alde-Ore Estuary SPA, even though the Applicant considered the original collision risk estimates to be very low [REP4-042]. The Alde-Ore Estuary SPA and in-combination collision risk to its qualifying feature, LBBG, are discussed in further detail in para 4.2.77 to 4.2.79 of this report.

Hornsea Project Three and Hornsea Project Four

- 4.2.53 An additional matter that has been addressed during the Examination is the decision to grant consent for the Hornsea Project Three and its implication for in-combination collision totals for ornithological features of FFC SPA (kittiwake and gannet) and Alde-Ore Estuary SPA (LBBG). The Applicant provided updated in-combination collision risk estimates at Deadline 4 including in-combination collision totals for Hornsea Project Three with caveats as set out in Paragraph 4 of [REP4-042].
- 4.2.54 In its 'Comments on Cumulative and In-Combination Risk Update [REP4-042]' at Deadline 5 [REP5-083], NE noted that the in-combination numbers included for Hornsea Project Three for all bird features (with the exception of FFC SPA kittiwakes) do not take into account the mitigation and additional baseline data provided in Ørsted's post-examination submissions for Hornsea Project Three. NE recommend that once these figures are available, all open offshore wind farm applications will need to

update their collision risk (and displacement) figures in their respective HRA in-combination assessments [REP5-083]. To date, this information has not been made available.

- 4.2.55 NE stated [REP5-083] that it is still considering the implications of the Hornsea Project Three decision and in-combination collision totals and is therefore unable to conclude no AEOI in relation to in-combination collision impacts for the gannet qualifying feature of FFC SPA and LBBG feature of the Alde-Ore Estuary SPA. However, Hornsea Project Three totals do not change NE's conclusions that AEOI cannot be ruled out in relation to in-combination collision effects for FFC SPA kittiwakes. Specific conclusions drawn in relation to these features are discussed in Paragraphs 4.2.70 to 72 and 4.2.77 to 4.2.80.
- 4.2.56 At ISH3 on the 19 January 2021, NE was asked how Hornsea Project Four figures should be considered in the in-combination totals. NE responded that if Hornsea Project Four is due to submit its application within the timeframe of this Examination, the Proposed Development will be in the planning system and would be a material consideration for the Secretary of State's Appropriate Assessment [as summarised in [REP5-089]. Further comments from NE are expected to be received at Deadline 6.

Proposed Non-Material Changes (NMC)

- 4.2.57 Discussions took place during the Examination regarding whether the proposed Non-Material Changes (NMC) at East Anglia THREE ((EA3) accepted in July 2020) and East Anglia ONE ((EA1) application to be submitted in early 2021) could be considered in the in-combination collision totals for gannet, kittiwake and LBBG and form part of the Applicant's proposed reduction.
- 4.2.58 The effect of the NMCs was initially presented in [REP1-047]. In this document, the Applicant determined that the NMCs would further reduce impacts on the key features, fully offsetting effects upon kittiwake from both EA2 and EA1N, and partially offsetting effects on gannet and LBBG from EA2 and EA1N.
- 4.2.59 NE raised concerns regarding the legal security of the proposed NMCs. NE also questioned whether the NMCs would be sufficient to prevent any further development of EA3 and EA1 in order to provide headroom for other offshore wind farm proposals [REP2-006 and REP3-116].
- 4.2.60 At Issue Specific Hearing 3 held on 19 January 2021, and as NE summarises in [REP5-087], the proposed NMCs are not legally secured as no determination has been made by the Secretary of State on the NMC for EA3 and no NMC application has yet been made for EA1. NE notes the potential for EA3 NMC to be refused, withdrawn or amended and the possibility that the EA1 application may either not be submitted, or could be amended. NE also notes the potential for the changes to be considered material by the Secretary of State, leading to the requirement for a material change process. Noting the uncertainty remaining in the NMCs, NE upholds its advice that the in-combination assessment should include figures for EA1 and EA3 without reduction for the proposed NMCs.

- 4.2.61 At [REP1-047], the Applicant maintained the position that it is appropriate to use these revised figures that are subject to the NMCs in the in-combination assessments. However, at Deadline 4, in response to NE's concerns, the Applicant submitted its 'Offshore Ornithology Cumulative and In-Combination Collision Risk Update' [REP4-042] that reverted to using the 'as consented' totals for both EA2 and EA1N offshore wind farms.
- 4.2.62 At [REP5-083], NE welcomes that the figures included in [REP4-042] for EA1 and EA3 have reverted to those for the consented projects rather than the figures for the NMC. NE notes that the figures now included for these two projects in [REP4-042] reflect those submitted at the end of the Norfolk Boreas Examination for all ornithological features.

Collision risk mitigation - draught height increases

- 4.2.63 NE expressed concerns about the predicted level of cumulative and in-combination impacts on North Sea seabirds [RR-059]. NE noted that in-combination effects are only likely to intensify given that additional birds from other existing and proposed offshore wind farms (with Boreas, the East Anglia projects (EA2 and EA1N), and Hornsea Project Four) are being added to these totals. NE therefore considers that without major project-level mitigation being applied to all relevant projects coming forward, there is a significant-risk of large-scale impacts on seabird populations [RR-059].
- 4.2.64 To minimise the contribution of the Proposed Development to the in-combination collision totals for FFC SPA kittiwake and gannet and Alde-Ore Estuary SPA LBBG [RR-059], NE recommended that the Applicant commit to raising the minimum draught height, as done by other projects (e.g. Hornsea 2, East Anglia THREE, and Norfolk Vanguard), in order to minimise the Proposed Development's contribution to the in-combination collision totals.
- 4.2.65 Taking into account NE's general concerns regarding in-combination collision risk and following detailed design reviews, the Applicant confirmed that the minimum draught height for both EA2 and EA1N would be increased by 2m, to 24m above MHWS. The Applicant concluded [REP1-047] that this increase in the minimum draught height would reduce the collision risk estimates at the two wind farms by up to 15% in some cases.
- 4.2.66 In its 'Comments on Cumulative and In-Combination Risk Update [REP4-042]' at Deadline 5 [REP5-083], NE welcomes the Applicant's proposed raising of the draught height. However, NE requests that further evidence should be provided by the Applicant as to why the draught height for EA2 and EA1N cannot be further increased. NE states that it continues to advise the Applicant to explore a minimum draught height greater than 24m to further reduce impacts.
- 4.2.67 The Applicant stated within its HRA Derogation case [REP3-053] that increasing the draught-height further would have implications on technical aspects of the Proposed Development and was constrained by the site conditions. The ExA explored these matters through ExQ2 (Question 2.2.7) [PD-030] to which a response has been requested at Deadline 6.

The alternatives to the design of the Proposed Development are discussed in the context of the HRA derogations in Section 5 of this RIES.

Flamborough and Filey Coast SPA – gannet and kittiwake

- 4.2.68 NE has concluded that an in-combination AEOI cannot be ruled out in respect of all features of the FFC SPA. This is also the position of the RSPB across all SPA sites, on the basis of the incremental effects on the conservation status of successive wind farms on seabird species. The RSPB has maintained that it cannot exclude AEOI on gannet due to collision risk from the Proposed Development alone [RR-067 and REP4-097].
- 4.2.69 In addition to the remaining concerns of NE and the RSPB on the approaches taken to collision risk modelling, there are also specific concerns relating to in-combination displacement effects for its auk (ie razorbill and guillemot) features, which are described in Paragraphs 4.2.36 to 4.2.42 of this RIES.

Gannet - assessment of collision risk (in-combination)

- 4.2.70 NE remains unable to rule out AEOI on the gannet feature of the FFC SPA for in-combination collision risk with other plans and projects when the Hornsea Project Three and Hornsea Project Four projects are included in the in-combination totals. NE's conclusions remain unchanged whilst it is still considering the implications of the Hornsea Project Three decision and in-combination collision totals when this project is included (see Paragraph 4.2.53 of this RIES).
- 4.2.71 In addition to in-combination collision impacts on the gannet of the FFC SPA, the RSPB does not agree to conclude no AEOI in relation to project alone collision impacts on gannet [REP4-097]. In its written representations (including [REP4-097]), and as noted in AS-054, the RSPB has expressed concern regarding the Applicant's assessment methodology, specifically in relation to the avoidance rate (AR) that has been applied to breeding gannet. The RSPB does not agree that the AR of 98.9% applied to non-breeding gannet is appropriate for breeding gannet due to "*the lack of available evidence relating to breeding birds*" [AS-054]. The RSPB has also raised concerns regarding "*as-built versus consented capacity of windfarms*". This matter is discussed in further detail in Paragraphs 4.2.57 to 4.2.62 of this RIES.
- 4.2.72 At [AS-054], the Applicant notes that at the time of writing (June 2020), the detail of the arguments presented by the RSPB about potential changes in behaviour and avoidance rate of gannet in the breeding season had not been investigated. The Applicant argued that NE has not recommended any such changes to its assessment methodology. In the Applicant's comments on the RSPB's Deadline 4 submission [REP5-016], the Applicant maintains its view that it has undertaken assessments for gannet and reached the conclusion that there will be no AEOI due to the project alone or in-combination with other plans and projects. Therefore, at the time of this RIES, the Applicant and the RSPB have not reached agreement to conclude no AEOI on the gannet feature of the FFC SPA from the project alone and this remains a point of ongoing dispute.



Kittiwake - assessment of collision risk (in-combination)

- 4.2.73 NE remains unable to rule out AEOI on the kittiwake feature of the FFC SPA on the basis that the Proposed Development would act to increase the in-combination collision impacts acting on kittiwakes from the FFC SPA [RR-059 and REP2-052].
- 4.2.74 At [REP2-052], NE reiterated that the Hornsea Project Three decision does not change its conclusions in relation to in-combination collision effects for FFC SPA kittiwakes for EA2. NE has advised that *“an AEOI could not be ruled out for in-combination collision risk to kittiwakes at the FFC SPA since Hornsea Project Two. Therefore, any additional mortality arising from further proposals would be considered adverse. Since Hornsea Project Two, further projects have been consented or waiting to be determined. Each project since Hornsea Two, including the proposed EA1N and EA2, makes a contribution to an in-combination total where AEOI cannot be ruled out. Therefore, even assuming the kittiwake mortality for Hornsea Project Three will be fully compensated, it does not change the fact that in-combination impacts with other projects remain”*.
- 4.2.75 At REP4-042, the Applicant states that, *“for kittiwake the total is given on the assumption that the compensation provided by Hornsea Project Three fully compensates for those collisions for the Flamborough and Filey Coast SPA and therefore zero collisions are attributed to the SPA from Hornsea Project Three”*. The Applicant therefore maintains its view that the contribution from the Hornsea Project Three wind farm should be removed from consideration as it considers that kittiwake mortality will be fully compensated for. At the time of this RIES, the Applicant and NE have not reached agreement on this matter and it remains a point of ongoing dispute.

Gannet and kittiwake - mitigation

- 4.2.76 To minimise the contribution of the Proposed Development to the in-combination collision totals for the kittiwake and gannet qualifying features of the FFC SPA, NE recommended that the Applicant commits to raising turbine draught height [RR-059 and REP2-052]. This matter is discussed in more detail in Paragraphs 4.2.63 to 4.2.67 of this report.

Alde-Ore Estuary SPA and Ramsar – Lesser black-backed gull (LBBG)

LBBG - assessment of collision risk (in-combination)

- 4.2.77 NE remains unable to rule out AEOI on the LBBG feature of the Alde-Ore SPA for in-combination collision risk with other plans and projects (including or excluding in-combination collision totals from the Hornsea Project Three and Hornsea Project Four projects [RR-059 and REP3-117]).

LBBG – apportioning rates

- 4.2.78 At [REP1-170], NE provided specific comments on the Applicant’s apportioning of impacts to LBBG from the Alde-Ore Estuary SPA in relation to the Proposed Development. NE advised [REP1-170] that a range of

potential breeding season apportioning rates are considered for the Proposed Development alone to reflect the uncertainty. NE states that this is consistent with rates provided during the Norfolk Vanguard and Norfolk Boreas Examinations. For Norfolk Vanguard and Boreas, the range advised by NE was 10%-30%. However, given that the Proposed Development is located closer to the Alde-Ore colony than the Norfolk projects, NE considers that the range of apportioning values needs to reflect the closer proximity of EA2 and therefore potentially higher use of the proposed area by LBBG from the Alde-Ore Estuary SPA. NE stated that it would welcome discussions with the Applicant to identify an appropriate range for breeding season apportioning of predicted collision mortalities to the Alde-Ore Estuary SPA. NE suggested that consideration is given to other LBBG breeding colonies also located within foraging range of the EA2 and EA1N sites (including town colonies), their proximity to the offshore wind farms compared to the Alde-Ore colony and also the sizes of these colonies compared to the Alde-Ore colony (ideally data used on colony sizes should be contemporaneous with the baseline survey data). Consideration should also be given to foraging area segregation of colonies.

- 4.2.79 In its written summary of oral representations made at ISH 3 [REP5-089], NE confirmed that until updated in-combination and project alone figures from the modelling (HP3 for clarification) had been provided it would not be in a position to update or change its conclusions. Therefore, NE's conclusions remain unchanged whilst it is still considering the implications of the Hornsea Project Three decision and in-combination collision totals when this project is included (see Paragraph 4.2.43 of this RIES).

LBBG - mitigation

- 4.2.80 To minimise the contribution of the Proposed Development to the in-combination collision totals for the LBBG qualifying feature of the Alde-Ore Estuary SPA, NE recommends that the Applicant commits to raising turbine draught height [RR-059 and REP2-052]. This matter is discussed in detail in Paragraphs 4.2.63 to 4.2.67 of this report.

Offshore Ornithology - post-consent monitoring

Offshore In-Principle Monitoring Plan (IPMP)

- 4.2.81 As stated in the Applicant's Offshore IPMP [APP-590], the document serves as a key mechanism through which the relevant regulatory authorities can be assured that required offshore monitoring activities associated with the construction and operation of the offshore infrastructure for the proposed EA2 project will be formally controlled and mitigated. [APP-590] covers all receptor groups (including Offshore Ornithology and Marine Mammals) identified in the HRA.
- 4.2.82 NE's main concerns related to the proposed post-consent monitoring for Offshore Ornithology [RR-059]. Given NE's general concerns about predicted levels of in-combination impacts on seabirds and the potential contribution of the Proposed Development to those impacts (should it be consented), NE considers that the following aspects are likely to be

relevant for consideration and should be treated as the main priority for post-consent monitoring:

- Validating levels of RTD displacement;
- Improving understanding of collision risk (which NE suggests could potentially include monitoring of collisions at the site via cameras on turbines, improvements to modelling, options for mitigation and reduction); and
- Collection of reliable data on seabird flight heights.

4.2.83 The Applicant submitted an updated Offshore IPMP at Deadline 3 [REP3-040]. In Paragraph 44, the Applicant states its “*support, in principle*” for joint industry projects/strategic seabird activity monitoring programmes. NE provided some interim comments on the Offshore IPMP at Deadline 4 [REP4-087], primarily advising that monitoring should focus on the extent of displacement pre and post construction.

4.2.84 At [REP5-086], NE raised concern that the current Offshore IPMP does not propose any project specific bird monitoring, and that the in-principle monitoring only makes reference to supporting joint industry/strategic monitoring for ornithology. NE’s view is that this approach is not sufficient and that the Offshore IPMP needs to state what monitoring will be conducted in relation to the Proposed Development, alongside firm commitments and frameworks for delivering the proposed monitoring.

4.2.85 At ISH3 on 19 January 2021, the Applicant confirmed that the EA2 Offshore IPMP would be updated to include monitoring of RTD and further comments from NE on the technical scope of the EA2 Offshore IPMP are expected as the Examination progresses.

4.3 Effects on Marine Mammals

4.3.1 The Applicant concludes in its HRA Information to Support Appropriate Assessment Report [APP-043] that there would be no AEOI on marine mammal qualifying features of The Wash and North Norfolk Coast SAC, the Humber Estuary SAC and the Southern North Sea (SNS) SAC. NE [RR-059] and TWT [RR-091] disagree that there will be no project alone or in-combination AEOI on the SNS SAC. Information provided by NE, TWT, and the MMO [RR-052] sets out concerns around the control of unexploded ordnance (UXO) clearance and piling activities, and the delivery of an adequate regulatory mechanism to manage underwater noise effects on harbour porpoise during construction in-combination with other plans and projects. The Applicant’s SoCG with NE [REP1-056] only records continuing discussion regarding the conclusion of no AEOI on the SNS SAC due to outstanding matters of disagreement around underwater noise effects on the qualifying feature harbour porpoise during construction. Whale and Dolphin Conservation also expressed concerns about adverse effects of construction noise on harbour porpoise [RR-090].



Southern North Sea Special Area of Conservation (SNS SAC)

Harbour porpoise and underwater noise

- 4.3.2 A draft Marine Mammal Mitigation Protocol (MMMP) was submitted by the Applicant [APP-591] for the purpose of securing embedded mitigation measures to reduce/avoid noise impacts to marine mammals in the SNS SAC. These measures included establishing a mitigation zone based on the maximum potential range for permanent auditory injury, termed Permanent Threshold Shift, via the activation of Acoustic Deterrent Devices (ADDs) and soft-start and ramp-up methods of working. The MMMP also presented commitments to restrictions related to UXO clearance and piling events during construction of the Proposed Development, stating that these were in addition to the measures within the draft MMMP.
- 4.3.3 The Applicant also submitted an In-Principle Site Integrity Plan (IPSIP) [APP-594] which set out the approach to delivery of mitigation measures to avoid AEOI on the qualifying features of the SNS SAC, with a final SIP to be approved post-consent. The purpose of the IPSIP is to provide a framework for the agreement and delivery of further mitigation measures that may be required based on the final Proposed Development design and actual in-combination scenario at the time of construction.

MMMP and SIP Measures

- 4.3.4 SNCB guidance thresholds used by the Applicant for disturbance state that *“displacement of harbour porpoise should not exceed 20% of the seasonal component of the SAC area at any one time and / or on average exceed 10% of the seasonal component of the SAC area over the duration of that season”* To ensure this is adhered to, the Applicant proposes additional mitigation measures in its HRA [APP-043] at paragraph 431, where based on a worst-case scenario of 100% disturbance from the Proposed Development in the offshore development area, only one UXO detonation (clearance) and/or piling event would occur *“at any one time”* and there would be no concurrent UXO/piling events between EA2 and EA1N should they be constructed at the same time. These measures are secured through the draft MMMP [APP-591] and an in-principle Site Integrity Plan (IPSIP) [APP-594] which are secured as certified plans in article 36 of the DCO [at application APP-023, latest version at time of writing [REP5-003]. Separate MMMPs and SIPs will manage piling and UXO clearance mitigation and will be finalised post-consent. The submitted MMMP and IPSIP contained no formal commitment to limit the number of overall UXO/piling events that could occur in a 24-hour period.
- 4.3.5 Based on these mitigation measures, the Applicant concludes in section 5 of the HRA no AEOI for the SNS SAC in relation to the conservation objectives for harbour porpoise. TWT [RR-091] and NE [RR-059] disagree that there will be no in-combination AEOI on the SNS SAC as a regulatory mechanism is not in place to manage underwater noise from multiple projects potentially in construction during the same timeframe as the Proposed Development. Following ISH3 (19 January 2021) at Deadline 3 the MMO referred to its work alongside NE under the Southern North Sea

Regulators Working Group [REP3-109] in seeking a mechanism to manage activities which generate noise, but acknowledged the positions of NE and TWT in that a solution is not likely to be found prior to the closure of the Examination.

- 4.3.6 NE [RR-059; Appendix B] contests the approach set out in the Applicant's HRA [APP-043] that more than one UXO/piling event should not take place within a 24-hour period "*at any one time*" preferring the wording used in the JNCC (2020) guidance "*in any given day*".
- 4.3.7 NE highlights that the current HRA assessment of "*at any one time*" in a 24-hour period has potential to cause displacement of up to 32% of the winter area of the SNS SAC and therefore potential for a significant effect. NE and the MMO [REP1-144] propose that these events should be limited to one per 24-hour period via condition in the DML across both EA2 and EA1N projects.
- 4.3.8 At Deadline 1, the Applicant submitted an addendum of Information to Support Appropriate Assessment [REP1-038] to update the impacts to integrity assessment; in paragraph 17, the Applicant commits to no concurrent piling/UXO detonation without mitigation within a 24-hour period for the Proposed Development alone and no concurrent piling between EA2 and EA1N "*in any given day*". It goes on to state that in the summer season, potentially more than one UXO/piling event could occur within a 24-hour period provided it can be demonstrated that effective mitigation is in place and such evidence would need be presented in the relevant SIP post-consent (paragraph 22). The Applicant submitted an updated MMMP [REP3-042] and IPSIP [REP3-044] at Deadline 3 reflecting these changes and committing to consider commercially available mitigation alternatives where they would be effective.
- 4.3.9 NE [REP3-118 and REP4-090], TWT [REP4-125] and the MMO [REP4-081] contested the wording of paragraphs 26 of the MMMP [REP3-042] and 51 of the IPSIP [REP3-044] where it states that UXO/piling events may be undertaken "*without at source mitigation*" and stated that no piling/UXO detonation should occur without mitigation unless consent has been obtained from the MMO following consultation with NE. Both request that these commitments are conditioned on the face of the DML in their own right, without the wording "*without at source mitigation*". The Applicant explains [REP4-016] that embedded mitigation would still be implemented for UXO/piling events as described in the MMMP and that "*without at source*" mitigation pertains only to additional measures such as bubble curtains.
- 4.3.10 The Applicant responded at Deadline 4 [REP4-016] reiterating that more than one event could only occur if mitigation measures (such as bubble curtains) could ensure that impacts would remain below the disturbance threshold (20%). It referenced conditions 12 and 13 of the transmission assets DML (Schedule 14), and conditions 16 and 17 of the generating assets DML (Schedule 13) [REP3-011] which determine that the MMMP and SIP must be submitted to and approved by the MMO before any UXO/piling events can commence. The Applicant stated a view [REP4-016]

that these conditions provide flexibility in applying up to date science, guidance and techniques in securing and implementing appropriate mitigation measures and provides an opportunity to account for any conservation objective changes prior to approval of the final MMMP and SIP and commencement of offshore construction activities. The Applicant also committed to consulting with NE and TWT through the IPSIP.

- 4.3.11 The updated IPSIP [REP3-044] also included an expansion in scope to include mitigation for project alone effects. TWT [REP4-125], MMO [REP4-081] and NE [REP3-118] commented that whilst proposing mitigation measures post-consent in the SIP for in-combination impacts is acceptable to ensure development can proceed, this is not appropriate for project alone impacts/effects which should be determined and mitigated pre-construction to give confidence in the assessment conclusions. The Applicant's position at Deadline 4 [REP4-016] was that it considered that many of the reasons why the SIP can be used to manage in-combination impacts applied equally to project alone effects. In the Applicant's Deadline 5 response [REP5-013, point 047] to the MMO [REP4-081] response, the Applicant confirms that it is exploring the possibility of project-alone effects being captured through a condition to the DML and DCO.
- 4.3.12 During ISH7 on 17 February 2021 [EV-102], the MMO and the Applicant confirmed that they were close to reaching agreement on the wording of the DML conditions securing the SIP, with the intention for removal of mitigation for project-alone effects from the SIP if the conditions can be agreed, and that further information is anticipated to be submitted at Deadline7.
- 4.3.13 The MMO [REP1-144 and REP4-081] stated its preference for a separate marine licence to control UXO detonations to allow for an up to date assessment, including of other noisy activities in the area at the time, prior to commencement of detonations. The Applicant responded at Deadline 5 that its position was that inclusion of UXO clearance in the DMLs is appropriate and that following discussions with the MMO this approach had been agreed. The Deadline 5 submission from the MMO [REP5-075] states that a separate licence for UXO clearance is considered most suitable, however provided its concerns can be addressed and there are no outstanding project alone AEOI the inclusion of UXO clearance in the DMLs could be acceptable. The ExA explored the MMO's position on the matter at ISH7, where the MMO stated that discussions were ongoing with the Applicant on addressing its concerns but that it maintains a preference for inclusion of UXO clearance activities in a separate marine licence [EV-102].
- 4.3.14 TWT [REP4-125] and NE [REP4-090] noted that the timescales for the discharge of plans and documents relating to UXO clearance activities in the Applicant's latest updates [REP3-042 and REP3-044] had been reduced from six to three months prior to commencement. NE considers that a six-month period is more appropriate to secure appropriate mitigation. The MMO supported this view. DML condition 16(3) was updated at Deadline 5 [REP5-003] to provide that the MMMP and SIP must be submitted at least six months prior to the start of UXO clearance activities. Six months was also provided for submission of the method statement for UXO

clearance, with the exception of the plan showing the area of clearance activities and any exclusion zone/ micrositing requirements, both of which must be submitted three months prior to activities beginning. At ISH7 on 17 February 2021 the MMO confirmed that it was content within this approach [EV-103]. Comments from other parties are anticipated at Deadline 7.

- 4.3.15 NE [RR-059, REP1-056 and REP4-095] and TWT [REP4-125] highlight the need for a regulatory mechanism to be developed by a competent authority to manage multiple SIPs across different projects as during construction and post-consent, new developments may come online, therefore a process for managing potential threshold exceedances needs to be in place. This matter was explored in ISH7 on 17 February 2021, during which the Applicant set out the likely responsible parties during construction and post-consent [EV-102].
- 4.3.16 In its Deadline 5 submission [REP5-075] the MMO makes reference to its involvement in the recent Review of Consents undertaken by the Department for Business, Energy and Industrial Strategy (BEIS) and subsequent work to vary existing DMLs for a number of other wind farms. In its representation, the MMO explains the implications of this work in relation to the requirement for and function of SIPs to manage noise impacts to the SNS SAC. The MMO provides details of updated wording to the DML Conditions pertaining to UXO clearance and pre-construction plans and documentation which it considers acceptable. It also requests and sets out a new SIP condition to be added to the DMLs. Further information from parties is anticipated at Deadline 7.

ADD mitigation, and alternative mitigation techniques

- 4.3.17 Section 2.4 of the MMO's RR [RR-052] recommends other noise impact mitigation methods such as bubble curtains and TWT [REP4-125] suggest exploration of UXO removal or leaving in-situ.
- 4.3.18 NE [REP1-166] raised the possibility of amending conditions for UXO detonation with cluster detonations within a 5km radius as an alternative mitigation technique. The Applicant included alternative mitigation techniques in the revised MMMP [REP3-042] and IPSIP [REP3-044] submitted at Deadline 3. NE welcomed the inclusion [REP4-090] however it commented that further information is required to understand the feasibility and appropriateness of the clustering technique.
- 4.3.19 Alternative mitigation techniques matters (including deflagration) were explored by the ExA at ISH7 on the 17th February 2021, where the Applicant responded that these techniques were included in the draft MMMP and IPSIP as potential options, and the use of them will be a matter for the final MMMP and SIP, depending on the information which becomes available as a result of detailed design investigations [EV-102] and the experience from other projects. The MMO supported this approach at ISH7 [EV-103].
- 4.3.20 TWT [REP4-125] request that monitoring is undertaken for ADD mitigation to improve understanding of its range of effectiveness in light of the limited

and differing amount of scientific evidence available. TWT also highlighted the application of an assumed maximum charge weight of 800kg by other projects, for example Hornsea Project Three, and questioned if the Applicant's assumption of a 700kg maximum was justified [REP3-042].

4.4 Effects on Onshore Ornithology/ Terrestrial Ecology

- 4.4.1 The Applicant concludes in its HRA Information to Support Appropriate Assessment Report [APP-043] that there would be no AEOI on Sandlings SPA as a result of construction phase habitat loss and disturbance to the qualifying features of breeding woodlark and breeding nightjar. NE disagreed with this conclusion in [RR-059]. NE [REP2-053] requested further information in relation to the proposed mitigation and construction methods before it would be in a position to exclude AEOI.

Sandlings SPA

- 4.4.2 The Applicant's Habitats Regulations Assessment – Information to Support Appropriate Assessment [APP-043] considered the potential for construction phase habitat loss and disturbance to breeding bird qualifying features of Sandlings SPA during cable installation. The paragraphs below set out the main areas of discussion during examination to date.

Horizontal Directional Drilling (HDD) vs open-cut trench methodologies for crossing Sandlings SPA

- 4.4.3 The Applicant prepared an Outline Landscape and Ecological Management Strategy (OLEMS) to accompany its Environmental Statement [APP-584]. This explained the preference for the cable route crossing of the Sandlings SPA to be carried out utilising open-cut trench methods. The OLEMS was subsequently updated during the Examination following feedback from Interested Parties and amendments to the design [REP3-030]. Following discussion at ISH7 (17th February 2021) the Applicant committed to a further update of the OLEMS to be submitted at Deadline 6 [EV-107].
- 4.4.4 In paragraph 37 of the HRA [APP-043] the Applicant has assessed the impacts associated with both open-cut (trench) and HDD methodologies for crossing the Sandlings SPA. In Table 3.1 [APP-043], the Applicant states that the worst-case scenario for habitat loss impacts are associated with the use of the open-cut crossing methodology. Conversely, worst-case for disturbance impacts are associated with the HDD crossing methodology. In Table 3.2 and section 3.3 of [APP-043], the Applicant states that an open-cut crossing technique is preferred for the onshore cable corridor route on the basis that duration of the works will be significantly less (an estimated 1 month, outside of the breeding season within the SPA and 2 months within a 200m buffer set around the SPA boundary) compared to HDD (which will last more than a two year period assuming that works are seasonally restricted). The Applicant therefore concludes that a reduced period of disturbance would be preferable using an open-cut technique to cross the SPA rather than an extended period of disturbance using an HDD technique.

- 4.4.5 Both NE [RR-059] and Save Our Sandlings [REP3-122], put forward their preference for HDD methodologies to undertake the crossing, to avoid habitat loss. The RSPB commented on a need for more information on working methods in its relevant representation [RR-067]. At points 2 and 3 of its response to NE, the Applicant [AS-036] stated that habitat loss impacts using an open-cut method have been minimised by crossing the SPA at its narrowest point and reducing the onshore cable route working width to 16.1m. The cable working width for EA1N would also be 16.1m and situated adjacent to that of the Proposed Development in this location. This is secured by Requirement 12.
- 4.4.6 Additionally, the Applicant also provided a project update [REP2-007] which it refers to in its response to NE's Deadline 2 submission [REP2-053] [REP3-070] committing to parallel cable duct installation for both projects should EA2 and EA1N be consented and constructed sequentially, within a 32m wide cable corridor (16.1m per project). The Applicant's view regarding crossing method preference is supported by East Suffolk Council (ESC) [REP4-059] which considers that open-cut techniques are preferable across the SPA to reduce the amount of machinery required and therefore minimise potential air quality and disturbance impacts.
- 4.4.7 The Applicant submitted an Outline SPA Crossing Method Statement [REP1-043] which provided further details on the potential methodologies to be adopted for open-cut and HDD crossings and concluded the Applicant's preference for open-cut method. NE responded to this document [REP2-053] stating that it considered open-cut methods would divide the SPA and have wider ecosystem impacts, and that such habitat loss could cause disruption over multiple breeding seasons beyond installation. NE requested further information on open-cut operations including plant and machinery required for excavating and backfilling the SPA crossing and the working area within the 200m buffer. Based on the current information, NE is not content to rule out AEOI on the Sandlings SPA from construction effects. The Applicant [REP3-070] explained that whilst open-cut methods will result in direct habitat loss within the SPA, there will be no loss of functioning habitat for SPA qualifying species (nightjar and woodlark). This is based on their known distributions. Any land lost would be reinstated as soon as practicable following completion of the works and prior to commencement of the 5-year habitat management period. It also stated that it would continue to liaise with NE in order to ensure the final SPA Crossing Method Statement provides adequate mitigation. At ISH3 (19 January 2021) the Applicant indicated that it hoped to agree a crossing solution with NE by Deadline 6 of the Examination [EV-047].
- 4.4.8 NE also requested justification as to the habitat reinstatement and enhancement within the SPA crossing, its function, timeframe and monitoring, advising that enhancement should go beyond the proposed 5 years post-cable installation [REP2-053]. NE provided further comment at Deadline 4 [REP4-092] on the matters pertaining to the proposed enhancement measures. The Applicant responded at Deadline 5 [REP5-015] restating previous information and committing to work with NE.

- 4.4.9 Further discussion was held at ISH3 on 19 January 2021 on these matters. The Applicant states in its written summary of oral case that matters yet to be agreed with NE are:
- The conclusions regarding the effects of open-cut trench crossing of the SPA;
 - The worst-case scenario assessed in [APP-043]; and
 - The details of the mitigation proposed for habitat loss [REP5-027].
- 4.4.10 The Applicant's Statement of Common Ground with the RSPB [REP1-395] records that the RSPB support the submission of additional detail in the Outline SPA Crossing Method Statement and that use of an open-cut trench crossing should be justified and agreed with NE. At D5, NE [REP5-084] confirmed that subject to specific conditions, it accepted that an AEOI is unlikely to occur as a result of the use of an open-cut trench method, based on further information supplied by the Applicant in relation to its Sandlings SPA Crossing Method Statement [REP1-043]. NE's proposed additional mitigation measures include ensuring that replacement nesting habitat is in place and functional before any crossing works take place, that the Applicant explore reinstatement options that would improve the habitat for interest features of the designated sites, and that monitoring should be in place for at least 5 years, but with the expectation that monitoring beyond this will be needed to ensure success.
- 4.4.11 NE provided further comments on the OLEMS at D5 [REP5-084]. In relation to protection of the Sandlings SPA interest features, it commented (Section 15 [REP5-084]) that the Applicant's proposal to survey for 5 years is not sufficient taking into account the length of time that the habitat will take to become favourable. It also noted that if monitoring identifies that birds are not using the land provided for mitigation, alternative mitigation land will need to be provided, secured through the DCO.
- 4.4.12 At ISH7 on 17 February 2021, the Applicant advised that it would provide suitable replacement habitat, making the best effort to maximise its value to the SPA qualifying bird species, but cannot guarantee that it will be occupied. It disagrees that it needs to allow for providing alternative mitigation should that become the case. The Applicant referenced its hope to agree with landowners a 10 year management plan for Work 12A (temporary ecological mitigation works in accordance with the ecological management plan and associated access). East Suffolk Council has stated that it will provide comment on this at D6 [EV-101].

Seasonal Restrictions on SPA Crossing

- 4.4.13 NE [RR-059] requested seasonal restrictions on the SPA crossing to avoid works taking place during the bird breeding season and requested that this was secured in the DCO and Code of Construction Practice. In response, the Applicant stated in the Outline SPA Crossing Method Statement (Section 2.4 [REP1-043]) that no construction works associated with the SPA crossing if undertaken by open cut trenching will be undertaken within the SPA or 200m buffer during nightjar and/or woodlark breeding bird

season (01 February to 31 August; this extends slightly beyond the breeding season) unless otherwise agreed with the local planning authority (LPA) and NE. The Applicant stated this seasonal restriction would not apply if the crossing was undertaken by HDD [REP3-084].

- 4.4.14 The Applicant submitted an updated OLEMS [REP3-030] to reflect this commitment. The OLEMS sets out the content of an Ecological Management Plan (EMP) to be produced post-consent and the EMP will include a Breeding Bird Protection Plan securing seasonal restrictions. However, the Applicant considered that these measures were sufficiently secured through Requirement 21 of the draft DCO [APP-023], as NE is named as a statutory consultee on the EMP. Within the Requirement construction of the onshore works cannot commence until the approval of the EMP by the LPA.
- 4.4.15 Within its comments on the OLEMS [REP5-084], NE acknowledge that the updated OLEMS provided additional clarity and accepts that the timing of the seasonal restriction can be based on the approach described, subject to approval from NE. This matter was explored by the ExA at ISH7 (17th February 2021) whereby the Applicant confirmed its view that the seasonal restriction is robustly controlled by the OLEMS but that it intended to specifically respond to NE concerns at Deadline 6.

Hundred River Crossing and potential impacts to Sandlings SPA

- 4.4.16 The Applicant proposes in ES Chapter 22, paragraph 203 [APP-070] that its preferred method to cross the Hundred River is open-cut trenching which would result in temporary impacts to the bed and bank habitats. NE highlights in its RR [RR-059] that this is hydrologically linked to Sandlings SPA and requests an assessment of alternative crossing methods to include HDD under the Hundred River. In its representation, NE advises that should HDD be used, details of the methodology will be required and mitigation should be in place to prevent bentonite breakout and to manage any potential breakout. NE suggests that an outline bentonite frackout document should be provided for each of the HDD locations.
- 4.4.17 The ExA explored the question of alternative crossing measures and the potential for impacts to the Sandlings SPA in ExQ1 (questions 1.2.66 and 1.2.67) [PD-018]. The Applicant responded to these questions in [REP1-107] stating that an account of the options considered and of the mitigation measures to be employed to avoid adverse effects would be submitted in an Outline Watercourse Crossing Method Statement at Deadline 3.
- 4.4.18 The Applicant states in its ecological clarification note [REP1-023] that the final methodology for crossing the Hundred River will be decided post-consent in agreement with the LPA through a final Watercourse Crossing Method Statement secured by Requirement 22 of the DCO. The Applicant submitted an OLEMS at Deadline 2 which includes an EMP at section 10 [REP3-030] however, this provides limited information and no assessment of potential impacts to the Sandlings SPA features as a result of crossing the Hundred River.

- 4.4.19 The Applicant submitted an Outline Watercourse Crossing Method Statement (OWCMS) [REP3-048] at Deadline 3 which presents an assessment of two alternative methods of crossing the Hundred River (dry and flume pipe techniques). Appendix 4 of the OWCMS explains that trenchless techniques are not considered viable due to the number of constraints, the lack of lateral space and the duration and plant machinery required for the works.
- 4.4.20 Following review of the OWCMS [REP4-092], NE highlighted that the document does not present a specific discussion on potential environmental impacts to Sandlings SPA and requested that either an Outline EMP or a revised OWCMS is submitted to the Examination. NE acknowledged that while mitigation measures are to be included in the approved EMP post consent, it expressed concern that in the absence of this information it will not have the opportunity to comment or agree to no AEOI to the SPA in relation to the Hundred River crossing before close of Examination. The Applicant responded at Deadline 5 stating that an updated OWCMS would be submitted at Deadline 6, to include a HRA screening exercise to address this point [REP5-015].
- 4.4.21 East Suffolk Council provided comment on the OWCMS [REP3-048] at Deadline 4, querying whether a restricted working width narrower than the proposed 70m could be achieved at the river crossing [REP4-059]. The Applicant responded at Deadline 5 [REP5-010] providing justification for the widths required and stating that the crossing method would remain under review.
- 4.4.22 At ISH7 on 17 February 2021, the Applicant re-confirmed that an updated OWCMS, which will take account of the Sandlings SPA, will be provided at D6 [EV-101 and EV-107].

Air quality effects on Sandlings SPA

- 4.4.23 At Deadline 1 the Applicant produced an Onshore Ecology Clarification Note [REP1-023] to address comments raised by NE, East Suffolk Council and Suffolk County Council during the SoCG process. Following comments from NE at Deadline 2 in relation to this note [REP2-055], the Applicant submitted an updated document [REP3-060] and an Air Quality Clarification Note [REP3-061]. NE provided comments at Deadline 4 [REP4-092] acknowledging the information as adequate in terms of identifying air quality impacts, but requesting a full assessment of the resulting effects of change in air quality during construction and decommissioning on the supporting habitats of Sandlings SPA. NE also noted that mitigation should be provided if the assessment was unable to rule out significant effects. The Applicant responded [REP5-015], agreeing to consider mitigation depending on the assessment work and stated a response would be provided at Deadline 6.
- 4.4.24 The ExA explored this matter at ISH7 (17th February 2021) during which the Applicant confirmed its intention to submit further information at Deadline 6. ESC highlighted its outstanding concerns related to the potential impacts of emissions from non-road mobile plant at the onshore cable landfall area, stating that its concerns are captured by NE's

submission [REP4-092]. ESC also restated its preference for an open-cut construction technique with respect to minimisation of emissions to air [EV-101].

5 ALTERNATIVES AND IROPI

- 5.0.1 The disagreement regarding the conclusions of AEOI in relation to the sites and features discussed above was identified in the Relevant Representations from NE and the RSPB [RR-059 and RR-067 respectively].
- 5.0.2 Prior to the commencement of the Examination, there have been other DCO applications where some of the same designated sites and features had been relevant considerations (Norfolk Vanguard Offshore Wind Farm, Norfolk Boreas Offshore Wind Farm, and Hornsea Project Three Offshore Wind Farm) where the competent authority has sought information on the HRA derogation tests (Alternative Solutions, and Imperative Reasons of Overriding Public Interest (IROPI)) during the decision period.
- 5.0.3 With reference to these other recent NSIP applications, the ExA issued a request (PD18, contained within [PD-013]) on 16 July 2020 asking the Applicant if there was a need to engage with the derogation tests under the Habitats Regulations, and if so, to provide the relevant information. PD18 also sought the views of NE on this matter. In response, NE provided comment that it was in the process of reviewing the relevant decisions and would also await further information expected at Deadline 1 regarding mitigation options to inform a full response [PDA-003]. The Applicant deferred response on the HRA derogations tests until Deadline 3 when it was anticipated that updated information regarding all affected qualifying features would be available [PDA-001].
- 5.0.4 The ExA requested an update on the relative positions of the Applicant and the Interested Parties, in particular NE, at ISH1 on 01 December 2020 on the need for consideration of the HRA derogations. The Applicant reiterated its confidence in its conclusions of no AEOI for all sites assessed, however confirmed it intended to submit a 'without prejudice' HRA derogations case, to include an examination of the alternative solutions considered [REP3-084].
- 5.0.5 Subsequently at Deadline 3, the Applicant submitted 'ExA.AS-7.D3.V1 EA2 HRA Derogation Case - Version 1' [REP3-053] as a response to PD18 in order to assist a full consideration of aspects of derogation (on a without prejudice basis) during the Examination. In this document, the Applicant restated its position that that there would be no AEOI on any European sites.
- 5.0.6 At ISH3 on 19 January 2021, Interested Parties were asked to draw on the Applicant's Deadline 3 submissions and responses made to them at Deadline 4. NE's interim comments at Deadline 4 [REP4-088] and its written summary of oral case [REP5-089] make reference to the proposed compensation measures, but do not make comment on the alternative

solutions or IROPI case presented in the Applicant's documents. Further comments from NE submitted at Deadline 5 provide advice in relation to the approach to establishing the need for compensation measures, but again did not provide comment on the case for alternatives and for IROPI presented by the Applicant in REP3-053 [REP5-082].

- 5.0.7 The Applicant's HRA Derogations Case [REP3-053] does not include information relating to the OTE SPA or the FFC SPA qualifying features of guillemot and razorbill, the Sandlings SPA, or the SNS SAC, which at the time of its submission were still in dispute regarding the conclusions of AEOI. The ExA asked the Applicant in ExQ2 (question 2.2.1, [PD-030]) to explain why these sites and qualifying features were not included in REP3-053. Question 2.2.2 asked NE, the RSPB and the MMO for their views on whether all of the necessary European sites and qualifying features were included in REP3-053. Responses to ExQ2 are requested for Deadline 6, which is not included in the scope of this RIES.
- 5.0.8 At ISH7 on 17 February 2021 the Applicant was questioned as to why SNS SAC was not included in the HRA Derogations Case [REP3-053]. The Applicant responded that it was confident that agreement on no AEOI could be reached in relation to this site [EV-102]. The Applicant indicated that an updated Derogation Case would be submitted at Deadline 6.
- 5.0.9 The ExA explored the Applicant's case for no alternative solutions at ExQ2 [PD-030]. Questions 2.2.3, 2.2.6, and 2.2.7 were directed to the Applicant asking for further information on the decisions made regarding design of the Proposed Development and the constraints identified to adopting larger wind turbine generators (beyond the parameters assessed), alternative turbine layouts, and alternative minimum turbine draught height.
- 5.0.10 Question 2.2.8 of ExQ2 asked the Applicant, NE, and the RSPB to expand on the information in REP3-053 on IROPI, regarding the significance of the Proposed Development's contribution to the public interests set out. This question also asked for comment on the justification that the reasons were overriding, in particular whether these reasons could be affected by the discussions and disagreements around the predictions of effects of the Proposed Development and conclusions of no AEOI on any of the European sites considered. Responses to ExQ2 were requested for D6, which is not included within the scope of this RIES

6 COMPENSATORY MEASURES

- 6.0.1 At Deadline 3 the Applicant submitted a document entitled 'HRA Compensatory Measures' [REP3-054], setting out an outline of the measures proposed for the affected qualifying features of the Alde-Ore Estuary SPA and FFC SPA. The sites and qualifying features covered by the HRA derogations document are set out in Table 1.1 of the document. As identified in Section 5 above, the document excludes discussion of the RTD qualifying feature of the OTE SPA, which at the time of its submission was still in dispute regarding the conclusions of AEOI. The document does not

include the harbour porpoise, qualifying feature of the SNS SAC or the qualifying features of Sandlings SPA.

- 6.0.2 At Deadline 4 NE stressed in interim comments [REP4-088], the need to reach agreement on the Proposed Development effects alone or in combination before determination of the need for and scale/nature of any compensation measures can be made. NE's interim comments at Deadline 4 provided advice on the compensation options that should be considered for kittiwake and gannet (FFC SPA), LBBG (Alde-Ore Estuary SPA), and red-throated diver (OTE SPA). Options included predator control in specific circumstances, provision of artificial nest sites for gannet and kittiwake, and advice that any compensatory measures for RTD need to be focussed on the removal of anthropogenic pressures within the OTE SPA [REP4-088]. NE commented that prey enhancement measures should remain an option to be considered, contradicting [REP3-054] which stated that this option had been agreed to be unviable with NE.
- 6.0.3 The RSPB provided comments on the proposed compensatory measures at Deadline 4 [REP4-097], stating its position that compensation remained a relevant matter to kittiwake, gannet, guillemot and razorbill at FFC SPA; LBBG at Alde-Ore Estuary SPA; and red-throated diver at the OTE SPA (specifying that this is in regards to EA1N). The document notes the exclusion of guillemot and razorbill from [REP3-054] and records the view that compensation for these qualifying features should remain under consideration.
- 6.0.4 The RSPB also provided comments on the specific measures proposed in relation to each qualifying feature, and advice on the feasibility and remaining barriers to delivery of the measures. The submission from the RSPB at Deadline 4 reserved detailed comment regarding measures for RTD until further details were available [REP4-097]. Included in these comments, the RSPB disagreed that predator management in relation to lesser black-backed gull of the Alde-Ore Estuary was a compensatory measure and is in fact an existing necessary site management measure. The ExA asked the RSPB in ExQ2 2.2.10 to provide more detail on the delivery of this measure as part of site management. The Applicant responded to the RSPB's Deadline 4 comments at Deadline 5, explaining where matters were in dispute and where further discussion and exploration into the form of the compensation measures was being undertaken [REP5-016].
- 6.0.5 The matter of prey availability/ enhancement was explored at ISH3 on 19 January 2021. In its written summary of oral case following the hearing [REP5-026] the Applicant provided its reasoning against the decision to discount prey enhancement as a feasible compensation measure. The reasoning draws from studies made of fisheries management undertaken by Ørsted, to be submitted along with further commentary by the Applicant at Deadline 6. In its written summary of oral case NE noted that its advice pertains to strategic level opportunities for delivery of compensation and that considering this option may allow a project-level assessment to contribute to that delivery [REP5-089].

- 6.0.6 At Deadline 5 the Applicant responded to NE's comments on the options under consideration and restated its rationale for exclusion of prey enhancement as a viable compensation measure, and also stated that a wider update will be provided at Deadline 6 [REP5-015]. At Deadline 5 NE provided expanded views on the compensation measures, re-stating its position regarding the need to exhaust avenues of mitigation before considering compensation. Concern has been expressed by NE regarding the ability of the compensation measures to satisfy the derogation tests and the confidence which can be placed in their feasibility and efficacy. NE requested that detail be provided on the nature of the measures and the delivery mechanisms and timescales involved [REP5-082].
- 6.0.7 Advice was also provided by NE at Deadline 5 on the risks and opportunities associated with specific measures. The advice stressed that sole reliance on artificial nest sites for kittiwakes carries risk as this measure is untested and will remain so until the measures proposed for Hornsea Project Three are built and operational monitoring information is available. NE also expressed concern that there may be a limit to the occupation of artificial nest sites in practice, and that difficulties are likely to be encountered in identifying suitable locations [REP5-082]. NE advised that if disturbance effects on RTD cannot be mitigated, compensation will be required, and urged the Applicant to consider project and strategic level options including navigational management to reduce anthropogenic influences within the OTE SPA [REP5-082]. In this document, NE also expressed broad agreement that predator exclusion is a feasible measure in principle in relation to LBBG, and advised that information relating to other projects including Norfolk Boreas Offshore Wind Farm is considered to ensure this measure is additional and specific to EA2.
- 6.0.8 The ExA explored through ExQ2 [PD-030] whether all possible measures to reduce impacts had been considered in relation to design of the Proposed Development (see Section 5). Question 2.2.9 asked the Applicant to respond to the comments made by NE in REP5-082 in relation to the proposed compensatory measures, and to clarify how compensatory measures proposed in REP3-054 are intended to be secured in the dDCO including allowing for long-term monitoring and adaptations should monitoring indicate measures are ineffective. Responses to these questions have been requested for Deadline 6.
- 6.0.9 The Applicant indicated at ISH9 that it would be submitting an updated compensatory measures plan at Deadline 6, seeking to address the points raised [EV-121].

7 SUMMARY

- 7.0.1 The ExA has produced this RIES to outline the position up to ISH 9 (19th February 2021 in respect of HRA matters during the Examination.
- 7.0.2 The Proposed Development is not connected with or necessary to the management for nature conservation of any European site(s). The Secretary of State for Business Energy and Industrial Strategy (SoSBEIS) is the relevant competent authority for the purposes of the Habitats Regulations and the Offshore Marine Regulations. This RIES is issued to assist the SoSBEIS in discharging its duties under these regulations and to ensure that Interested Parties including the statutory nature conservation bodies are consulted formally on Habitats Regulations matters.
- 7.0.3 The Applicant submitted a Habitats Regulations Assessment (HRA) screening exercise [APP-044] to support its DCO application. The methodology and outcomes of the Applicant's screening for likely significant effects on European sites was subject to some discussion and scrutiny, however, were not disputed by any Interested Party. The Applicant's screening assessment concluded the potential for likely significant effects on a number of European sites.
- 7.0.4 The Applicant submitted an assessment of the potential for the Proposed Development, either alone or in-combination with other plans or projects, to impact any of these sites' qualifying features and result in an adverse effect on site integrity, in light of their conservation objectives (Information to Support an Appropriate Assessment Report [APP-043]).
- 7.0.5 The Applicant's assessment concluded that adverse effects on integrity could be excluded for all of the sites and their qualifying features included in the assessment.
- 7.0.6 The conclusion of no AEOI was disputed for a number of these sites, as summarised below:
- **Alde-Ore Estuary SPA and Ramsar** - AEOI cannot be excluded from in-combination collision mortality during operation to breeding lesser black-backed gull;
 - **Flamborough and Filey Coast SPA** - AEOI cannot be excluded from in-combination collision mortality during operation to breeding gannet and kittiwake; and due to in-combination displacement effects during operation on breeding razorbill, guillemot; and due to in-combination displacement and collision mortality effects for the seabird assemblage;
 - **Outer Thames Estuary SPA** - AEOI cannot be excluded from in-combination displacement effects during construction and operation on non-breeding red-throated diver;

- **Sandlings SPA** - AEOI cannot be excluded from project alone and in-combination disturbance effects during construction on breeding nightjar and woodlark; and
- **Southern North Sea SAC** - AEOI cannot be excluded from project alone and in-combination effects of underwater noise during construction on harbour porpoise.

- 7.0.7 Matters in relation to collision mortality and resulting effects on seabird qualifying features have a bearing on the conclusions regarding AEOI for the gannet, kittiwake, and seabird assemblage qualifying features of Flamborough and Filey Coast SPA and the lesser black-backed gull qualifying feature of the Alde-Ore Estuary SPA and Ramsar site. Matters of disagreement are around the approach and interpretation of collision risk modelling and the data for inclusion within the in-combination assessment.
- 7.0.8 Matters relating to the assessment of displacement effects have a bearing on the conclusions regarding AEOI for the guillemot, razorbill, and seabird assemblage qualifying features of Flamborough and Filey Coast SPA and the red-throated diver qualifying feature of the Outer Thames Estuary SPA. Matters of disagreement remain around the assessment of displacement effects and the ecological implications of those effects for the seabird populations, and the data for inclusion within the in-combination assessment.
- 7.0.9 In addition to these matters, discussion is ongoing with regards to the means of avoiding and or reducing collision risk and displacement effects through design amendments to the Proposed Development.
- 7.0.10 The Applicant has provided updates to the work undertaken in response to advice and comments from Interested Parties and further submissions on the matters above are to be provided by the Applicant and Interested Parties at Deadline 6.
- 7.0.11 With respect to the Southern North Sea SAC, disagreement is centred around the delivery and securing mechanism of the mitigation measures set out in the HRA Addendum for Marine Mammals [REP1-038], IPSIP [REP3-044] and draft MMMP [REP3-042]. The wording of relevant DCO Requirements and DML conditions remains in discussion with the MMO, as reflected in the Statement of Common Ground between the Applicant and the MMO [REP5-033]. These matters are being progressed by the Applicant and Interested Parties, specifically NE and the MMO, and progress is anticipated to be made at Deadline 6 and Deadline 7.
- 7.0.12 No agreement on the exclusion of AEOI to Sandlings SPA has been reached. Matters remaining to be resolved are details of the Outline SPA Crossing Method Statement; details of pre-construction mitigation measures and timescales; determination of air quality effects on supporting habitats; and the inclusion of an assessment of effects on the SPA within the OWCMS. These matters have been stated as being subject to further submissions from the Applicant at Deadline 6.



- 7.0.13 In light of the uncertainty regarding the conclusions of adverse effects on integrity, and continued representations from Interested Parties and lines of enquiry from the ExA, the Applicant submitted a 'without prejudice' HRA derogations case [REP3-054] and a document entitled 'HRA Compensatory Measures' [REP3-054] into the Examination at Deadline 3. The Applicant maintains that AEOI can be excluded for all sites and features.
- 7.0.14 Progression of matters relating to avoidance and mitigation has been highlighted by NE as essential to understand the need for and the extent of compensation measures. The discussion around amendments to the Proposed Development is also of relevance to the case for 'no alternative solutions' included in the Applicant's derogations case.
- 7.0.15 Interested Parties, including NE and the RSPB, have provided comments on the Applicant's derogation case and compensation plans, which the Applicant has committed to updating at Deadline 6 to be available for further comment at Deadline 7 of the Examination.

ANNEX 1: MAIN DOCUMENTS REFERRED TO WITHIN THE RIES

This annex provides a guide to the main documents used to inform the RIES. The table is included to assist the reader and is not intended as an exhaustive list.

Exam Library Reference	Document
Application Documents	
APP-023	3.1 Draft Development Consent Order, October 2019 Version 1
APP-043	5.3 Habitat Regulations Assessment - Information to Support Appropriate Assessment Report, September 2019 Version 1
APP-044	5.3.1 Habitat Regulations Assessment - Appendix 1 - Information to Support AA Report - HRA Screening Report, October 2019 Version 1
APP-045	5.3.2 Habitat Regulations Assessment - Appendix 2 - Information to Support AA Report - Screening Matrices, October 2019 Version 1
APP-046	5.3.3 Habitat Regulations Report - Appendix 3 - Information to Support AA Report - Integrity Matrices, October 2019 Version 1
APP-047	5.3.4 Habitat Regulations Assessment - Appendix 4 - Information to Support AA Report - Consultation Responses, October 2019 Version 1
APP-054	6.1.6 Environmental Statement (ES) Chapter 6 - Project Description, October 2019 Version 1
APP-060	6.1.4 Environmental Statement - Chapter 12 - Offshore Ornithology, October 2019 Version 1
APP-070	6.1.22 Environmental Statement - Chapter 22 - Onshore Ecology, October 2019 Version 1
APP-471	6.3.12.3 Environmental Statement - Appendix 12.3 - Information for the Cumulative Assessment, October 2019 Version 1
APP-584	8.7 Outline Landscape and Ecological Management Strategy, October 2019 Version 1
APP-590	8.13 Offshore In-Principle Monitoring Plan
APP-591	8.14 Draft Marine Mammal Mitigation Protocol, October 2019 Version 1

Exam Library Reference	Document
APP-594	8.17 In-Principle Site Integrity Plan for the Southern North Sea Special Area of Conservation, October 2019 Version 1
Post-submission updates	
AS-036	Additional Submission - Applicant's Comments on Relevant Representations - Volume 3: Technical Stakeholders - Submitted in response to the Examining Authority's request in the Rule 9 Letter of 21 May 2020
AS-059	Marine Management Organisation Additional Submission - Comments on Relevant Representations - Submitted in response to the Examining Authority's request in the Rule 9 Letter of 21 May 2020
AS-060	Natural England Additional Submission - Submitted in response to the Examining Authority's request in the Rule 9 Letter of 21 May 2020
Relevant Representations	
RR-052	Marine Management Organisation, 24 January 2020
RR-059	Natural England, 27 January 2020
RR-067	Royal Society for the Protection of Birds, 27 January 2020
RR-091	The Wildlife Trusts, 27 January 2020
RR-090	Whale and Dolphin Conservation Society 06 December 2020
Procedural Decisions	
PD-013	Rule 6 Letter, 16 July 2020
PD-001	Notification of Decision to Accept Application
PD-003	Section 55 checklist
PD-018	Examining Authority First Written Questions (ExQ1), 12 October 2020
PD-030	Examining Authority Second Written Questions (ExQ2), 12 February 2021
Deadline 1 (02 November 2020)	
REP1-004	Applicant - Deadline 1 Submission - 2.2 Land Plans Onshore - Rev 03, 23 October 2020
REP1-018	Applicant's updated 5.3.2 Habitat Regulations Assessment - Appendix 2 - Information Support AA Report Screening Matrices - Clean - Rev 02, 02 November 2020

Exam Library Reference	Document
REP1-023	Applicant's Deadline 1 Submission: Clarification Note Onshore Ecology, Revision 001, 02 November 2020
REP1-038	Applicant's updated Information to Support Appropriate Assessment – Addendum for Marine Mammals - Rev-001, 02 November 2020
REP1-043	Applicant's Outline SPA Crossing Method Statement - Rev-001, 02 November 2020
REP1-047	Deadline 1 Submission - Offshore Ornithology Cumulative and In Combination Collision Risk Update - Rev-01, 02 November 2020
REP1-056	Applicant's Draft Statement of Common Ground Natural England (Offshore) - Rev -001, 02 November 2020
REP1-057	Applicant's Draft Statement of Common Ground Natural England (Onshore) - Rev -001, 02 November 2020
REP1-058	Applicant's Draft Statement of Common Ground Natural England (Offshore Ornithology) - Rev -001
REP1-107	Deadline 1 Submission - Applicants' Responses to Examining Authority's Written Questions Volume 4 – 1.2 Biodiversity Ecology and Natural Environment - Rev - 001
REP1-144	Marine Management Organisation (MMO), Deadline 1 Submission - Written Representation
REP1-159	Natural England Deadline 1 Submission - Appendix K1-Response to Examining Authority's First Round of Written Questions
REP1-166	Natural England Deadline 1 Submission - Appendix B1b - Comments to the Applicant Comments on Natural England's Relevant and Written Representations [AS-036] Marine Mammals
REP1-170	Natural England Deadline 1 Submission - Appendix A2 - Further Advice of Lesser Black-Backed Gull (LBBG) Apportioning at Alde-Ore Estuary Special Protection Area (SPA)
REP1-172	Natural England's recommended approach to mitigating and assessing displacement effects on red throated diver from Outer Thames Estuary Special Protection Area, 02 November 2020
REP1-180	Royal Society of the Protection of Birds Deadline 1 Submission - Written Representation
REP1-395	Deadline 1 Submission - Draft Statement of Common Ground Royal Society for the Protection of Birds (Onshore) - Rev - 002

Exam Library Reference	Document
	- Late submission accepted at the discretion of the Examining Authority
Deadline 2 (17 November 2020)	
REP2-006	Deadline 2 Submission - ExA.AS-3.D2.V1 EA1N&EA2 Cumulative Auk Displacement and Seabird Assemblage Assessment of FFC SPA and Gannet PVA - Version 001
REP2-007	Deadline 2 Submission - ExA.AS-4.D2.V1 EA1N&EA2 Project Update Note - Version 001
REP2-052	Deadline 2 Submission - Appendix A9 - NE Comments on Cumulative and In-Combination Collision Risk Update [REP1-047]
REP2-053	Natural England, Deadline 2 Submission - Appendix C2b – NE Comments on SPA Crossing Method Statement [REP1-043]
REP2-055	Deadline 2 Submission - Appendix C5 - NE Comments on Onshore Ecology Clarification Note [REP1-023]
REP2-057	Natural England, Deadline 2 Submission - Appendix F6 - NE comments on Habitat Regulations Assessment Appendix 2 [REP1-017]
Deadline 3 (15 December 2020)	
REP3-011	Applicant's Deadline 3 Submission - 3.1 EA2 Draft Development Consent Order (Clean) - Version 03
REP3-013	Deadline 3 Submission - 3.1.1 Schedule of Changes to the Draft Development Consent Order - Version 02
REP3-016	Applicant's Deadline 3 Submission - 5.3.2 EA2 Habitats Regulations Assessment - Appendix 2 - Information to Support Appropriate Assessment Report - Screening Matrices (Clean) - Version 03
REP3-023	Applicant's Deadline 3 Submission - 8.1 Outline Code of Construction Practice - Version 02
REP3-030	Applicant's Deadline 3 Submission - 8.7 Outline Landscape and Ecological Management Strategy (Clean) - Version 02
REP3-040	Applicant's Deadline 3 Submission - 8.13 Offshore In-principle Monitoring Plan (Clean) - Version 2
REP3-041	Applicant's Deadline 3 Submission - 8.13 Offshore In-principle Monitoring Plan (Tracked) - Version 2
REP3-042	Applicant's Deadline 3 Submission - 8.14 Draft Marine Mammal Mitigation Protocol (Clean) - Version 2

Exam Library Reference	Document
REP3-044	Applicant's Deadline 3 Submission - 8.17 In-principle Southern North Sea Special Area of Conservation Site Integrity (Clean) - Version 2
REP3-048	Applicant's Deadline 3 Submission - ExA.AS-3.D3.V1 EA2 Outline Watercourse Crossing Method Statement - Version 01
REP3-049	Applicant's Deadline 3 Submission - ExA.AS-4.D3.V1 EA1N&EA2 Displacement of red-throated divers in the Outer Thames Estuary SPA - Version 01
REP3-053	Applicant's Deadline 3 Submission ExA.AS-7 D3 V1 EA1N/EA2 HRA Derogation Case - Version 1
REP3-054	Applicant's ExA.AS-8.D3.V1 HRA Compensatory Measures
REP3-060	Applicant's Deadline 3 Submission - ExA.AS-14.D3.V1 EA1N&EA2 Deadline 3 Onshore Ecology Clarification Note - Version 01
REP3-061	Applicant's Deadline 3 Submission - ExA.AS-15.D3.V1 EA1N&EA2 Deadline 3 Air Quality Clarification Note - Version 01
REP3-070	Applicant's Deadline 3 Submission - ExA.AS18-D3.V1 EA1N&EA2 Applicants' Comments on Natural England's Deadline 2 Submissions - Version 1
REP3-074	Applicant's Deadline 3 Submission - ExA.AS-22.D3.V1 EA2 Best Practice Protocol for Minimising Disturbance to Red-Throated Diver - Version 01
REP3-084	Applicant's Deadline 3 Submission - ExA.SN1.D3.V1 EA1N&EA2 Written Summary of Oral Case (ISH1) -Version 01
REP3-090	Applicant's Deadline 3 Submission - ExQ1.3.4 EA2 PA2008 s127 Statutory Undertakers' Land or Rights (Tracked) - Version 03
REP3-116	Natural England, Deadline 3 Submission - Appendix A10 - Comments on Assessment of Flamborough and Filey Coast SPA and Gannet PVA [REP2-006]
REP3-118	Natural England, Deadline 3 Submission - Appendix B2 - Comments on Information to Support Appropriate Assessment - Addendum for Marine Mammals [REP1-038]
REP3-122	Save Our Sandlings, Deadline 3 Submission - Post hearing Submission
Deadline 4 (13 January 2021)	
REP4-016	Applicant's Deadline 4 Submission - EA1N&EA2 Applicants' Comments on Natural England's Deadline 3 Submissions

Exam Library Reference	Document
REP4-042	Applicant's Deadline 4 Submission - Deadline 4 Offshore Ornithology Cumulative and In-Combination Collision Risk Update
REP4-059	East Suffolk Council, Deadline 4 Submission - Comments on the Applicants Deadline 3 submission
REP4-081	Marine Management Organisation, Deadline 4 Submission
REP4-087	Natural England, Appendix A12 – Advice on RTD in the OTE SPA
REP4-088	Natural England - Appendix A13 Interim Comments on Ornithology Compensation
REP4-089	Natural England - Appendix A14 – Legal Submission on RTD Displacement within OTE SPA REP3-049
REP4-090	Natural England, Deadline 4 Submission - Appendix B3 - Comments on MMMP [REP3-042] and SIP [REP3-044]
REP4-092	Natural England, Deadline 4 Submission - Appendix C6 - Comments to Onshore Ecology Documents REP3-048, REP3-060, REP3-061, REP3-070
REP4-095	Natural England, Deadline 4 Submission - Appendix I1d - Risk and Issues Log
REP4-097	RSPB Deadline 4 Submission
REP4-125	The Wildlife Trusts, Deadline 4 Submission - Comments on the Applicants Deadline 3 submission
Issue Specific Hearing 3 (19 January 2021)	
EV-047	Recording of Issue Specific Hearing 3 (ISH3) – Session 2 – 19 January 2021
EV-050	Action Points from Issue Specific Hearing 3 (ISH3) 19th January 2021
Deadline 5 (03 February 2021)	
REP5-010	Applicant's Deadline 5 Submission - EA1N&EA2 Applicants' Comments on East Suffolk Council's Deadline 4 Submissions
REP5-013	Applicant's Deadline 5 Submission - EA1N&EA2 Applicants' Comments on Marine Management Organisations Deadline 4 Submissions
REP5-015	Applicant's Deadline 5 Submission - EA1N&EA2 Applicants' Comments on Natural England's Deadline 4 Submissions

Exam Library Reference	Document
REP5-016	Applicant's Deadline 5 Submission - EA1N&EA2 Applicants' Comments on Royal Society of the Protection of Birds (RSPB) Deadline 4 Submissions
REP5-025	Applicant's Deadline 5 Submission - EA1N&EA2 Displacement of Redthroated Divers in the Outer Thames Estuary SPA
REP5-026	Applicant's Deadline 5 Submission - EA1N&EA2 Applicants' Responses to Hearing Action Points (ISH3, ISH4, ISH5, OFH6 and ISH6)
REP5-027	Applicant's Deadline 5 Submission - EA1N&EA2 Written Summary of Oral Case (ISH3)
REP5-033	Applicant's Deadline 5 Submission - EA1N&EA2 Draft Statement of Common Ground with Marine Management Organisation - Version 4
REP5-075	Marine Management Organisation, Deadline 5 Submission - Cover Letter and Deadline Response
REP5-082	Natural England Deadline 5 Submission - Appendix A15 - Comments on HRA Derogation Case [REP3-053] and HRA Compensatory Measures [REP3-054]
REP5-083	Natural England Deadline 5 Submission - Appendix A16 - Comments on Cumulative and In-Combination Risk Update [REP4-042]
REP5-084	Natural England Deadline 5 Submission - Appendix C7 - NE Terrestrial Ecology Update and Comments to [REP3-031, REP4-004, 005, 015, 043]
REP5-086	Natural England Deadline 5 Submission - Appendix F8 - NE Comments on Offshore IPMP [REP3-040, REP3-041]
REP5-087	Natural England Deadline 5 Submission - Appendix G3 - Advice on Non-Material Changes and Headroom
REP5-089	Natural England Deadline 5 Submission - Appendix K2 - Written Summary of Oral Representations made at Issue Specific Hearing 3: Biodiversity and Habitats Regulations Assessment
Issue Specific Hearing 7 (17 February 2021) and ISH 9 (19 February 2021)	
EV-101	Recording of Issue Specific Hearing 7 (ISH7) Session 1 - 17 February 2021
EV-102	Recording of Issue Specific Hearing 7 (ISH7) Session 2 - 17 February 2021



Report on the Implications for European Sites for
East Anglia TWO Offshore Windfarm

Exam Library Reference	Document
EV-103	Recording of Issue Specific Hearing 7 (ISH7) Session 3 - 17 February 2021
EV-107	Action Points from Issue Specific Hearing 7 (ISH7) - 17 February 2021
EV-121	Action Points from Issue Specific Hearing 9 (ISH9) - 19 February 2021

ANNEX 2: HRA INTEGRITY MATRICES

HRA Screening Matrices

Revised HRA Screening Matrices were provided by the Applicant for Deadline 3 [REP3-016] and are available at the following link:

[Revised HRA matrices](#)

HRA Integrity Matrices

Revised HRA Integrity Matrices were not provided by the Applicant.

The Applicant's Integrity Matrices have been amended by the ExA for the following sites:

- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar (combined with corresponding SPA);
- Flamborough and Filey Coast SPA;
- Outer Thames Estuary SPA;
- Sandlings SPA; and
- Southern North Sea SAC.

This annex of the RIES identifies the European sites and features for which the Applicant's conclusions with regards to adverse effects on integrity were disputed by Interested Parties. Therefore, revised integrity matrices have been produced by the Planning Inspectorate.

Key to Matrices:

- ✓ Adverse effect on integrity (AEOI) cannot be excluded
- × No AEOI
- ? Applicant and Interested Parties do not agree that an AEOI can be excluded
- n/a impact not considered relevant for the feature or brought into Stage 2
- C construction
- O operation
- D decommissioning

Information supporting the conclusions is outlined in footnotes for each table with reference to relevant sections of the RIES



Stage 2 Matrix 1: Alde-Ore Estuary SPA and Ramsar (Project-alone or In-combination)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:					
	Collision mortality (project alone)			Collision mortality (in-combination)		
	C	O	D	C	O	D
Breeding lesser black-backed gull <i>Larus fuscus</i>	N/A	X (a)	N/A	N/A	? (b)	N/A
<p>(a) The Applicant has concluded no adverse effects on LBBG due to collision during operation from the Proposed Development alone, and this is detailed in APP-043 and APP-046. Concerns have been raised by NE in relation to aspects of the collision risk modelling carried out by the Applicant, however, this conclusion is not disputed (Table 4.2 of the RIES, [REP1-058, REP5-088]).</p> <p>(b) The Applicant has concluded no adverse effects on LBBG due to in-combination collision during operation, on the basis of modelled reduction in population growth being less than 1% for all estimates. NE has raised concerns [REP3-117, REP5-083] about the Applicant's Collision Risk Modelling assumptions and approach, and the data included within the in-combination assessment, stating that they cannot agree that AEOI can be excluded. The matters discussed during the Examination in relation to collision risk modelling are signposted in this RIES Paragraphs 4.2.44 to 4.2.67; and in relation to this qualifying feature in Paragraphs 4.2.77 to 4.2.80. The Applicant has undertaken updated assessments to address the concerns raised, however, NE retains the position that it cannot agree to exclude AEOI (RIES para 4.2.54 to 4.2.57) [REP3-117, REP5-083].</p>						



Stage 2 Matrices Matrix 2: Flamborough and Filey Coast SPA (Project-alone)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:					
	Displacement			Collision mortality		
	C	O	D	C	O	D
Breeding Gannet <i>Morus bassanus</i>	N/A	x (a)	N/A	N/A	x (b)	N/A
Breeding Kittiwake <i>Rissa tridactyla</i>	N/A	N/A	N/A	N/A	x (b)	N/A
Breeding Razorbill <i>Alca torda</i>	N/A	x (a)	N/A	N/A	N/A	N/A
Breeding Guillemot <i>Uria aalge</i>	N/A	x (a)	N/A	N/A	N/A	N/A
Seabird assemblage	x (c)	x(c)	x(c)	x(c)	x(c)	x(c)
<p>(a) The Applicant’s assessment concluded that AEOI could be excluded in relation to operational displacement effects on all these qualifying features from the project alone [APP-043 and APP-046]. NE agree with these conclusions [REP1-058].</p> <p>(b) The Applicant’s assessment concluded that AEOI could be excluded in relation to operational collision effects on both these qualifying features from the project alone. NE agree with these conclusions [REP1-058]. It is noted that the RSPB do not support this view in relation to effects on gannet [REP4-097] (RIES Table 4.0).</p> <p>(c) While the Applicant’s screening exercise [APP-44] did not screen LSE out for this feature, the Applicant did not include it within its assessment of effects on integrity [APP-043]. This matter was raised by the RSPB [RR-067] and responded to by the Applicant [REP2-006] where it provided justification for ruling out impact-effect pathways for all the assemblage species not already considered as individual qualifying features. The matters addressed during Examination are signposted in this RIES Paragraphs 4.2.34 to 4.2.35.</p>						



Stage 2 Matrices Matrix 3: Flamborough and Filey Coast SPA (In-combination)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Displacement (In-combination)			Collision mortality (In-combination)			Displacement (In-combination) and Collision mortality (In-combination)		
	C	O	D	C	O	D	C	O	D
Breeding gannet <i>Morus bassanus</i>	N/A	x (a)	N/A	N/A	? (b)	N/A	N/A	x (c)	N/A
Breeding kittiwake <i>Rissa tridactyla</i>	N/A	N/A	N/A	N/A	? (b)	N/A	N/A	N/A	N/A
Breeding razorbill <i>Alca torda</i>	N/A	? (d)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Breeding guillemot <i>Uria aalge</i>	N/A	? (d)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seabird assemblage	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)

(a) The Applicant’s assessment concluded that AEOI could be excluded in relation to operational displacement effects in-combination with other plans and projects on gannet [APP-043 and APP-046]. NE agree with the methodology of the assessment, however, did not agree with these conclusions with regards to the EIA and is recorded as in discussion in relation to AEOI in the SoCG between NE and the Applicant [REP1-058]. However, in-combination displacement effects on gannet have not been commented on by NE with regards to the conclusions against AEOI since REP3-0117 where it raised a concern [it is not addressed in REP5-083 or REP5-088].

(b) The Applicant’s assessment concluded that AEOI could be excluded in relation to operational collision effects on gannet and kittiwake in-combination with other plans and projects [APP-043 and APP-046]. NE disagree with these conclusions, and continue to hold this position following updated assessment work undertaken by the Applicant [REP1-058, REP5-083]. The matters discussed during the Examination in relation to collision risk modelling are signposted in RIES Paragraphs 4.2.44 to 4.2.67; and in relation to these qualifying features in para 4.2.68 to 4.2.76.

(c) No explicit disagreement on this matter has been expressed, however as outlined above uncertainty remains regarding the in-combination assessments of collision risk.



European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Displacement (In-combination)			Collision mortality (In-combination)			Displacement (In-combination) and Collision mortality (In-combination)		
	C	O	D	C	O	D	C	O	D
Breeding gannet <i>Morus bassanus</i>	N/A	x (a)	N/A	N/A	? (b)	N/A	N/A	x (c)	N/A
Breeding kittiwake <i>Rissa tridactyla</i>	N/A	N/A	N/A	N/A	? (b)	N/A	N/A	N/A	N/A
Breeding razorbill <i>Alca torda</i>	N/A	? (d)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Breeding guillemot <i>Uria aalge</i>	N/A	? (d)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seabird assemblage	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)	x(e)

(d) The Applicant’s assessment concluded that AEOI could be excluded in relation to operational displacement effects in-combination with other plans and projects on razorbill and guillemot [APP-043 and APP-046]. NE did not agree with these conclusions [REP1-058], citing the use of incomplete project data sets. NE’s position following updated assessment work undertaken by the Applicant is that AEOI can be excluded, but that it is unable to rule out AEOI in relation to displacement of razorbill and guillemot if figures from these projects are included in the in-combination assessment [REP3-117, REP5-083]. Matters discussed during the Examination are signposted in RIES para 4.2.35 to 4.2.42.

(e) While the Applicant’s screening exercise [APP-44] did not screen LSE out for this feature, the Applicant did not include it within its assessment of effects on integrity [APP-043]. This matter was raised by the RSPB [RR-067] and responded to by the Applicant [REP2-006] where it provided justification for ruling out impact-effect pathways for all the assemblage species not already considered as individual qualifying features. The matters addressed during Examination are signposted in this RIES Paragraphs 4.2.32 to 4.2.33.



Stage 2 Matrices Matrix 4: Outer Thames Estuary SPA (Project-alone and In-combination)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Barrier Effects and collision			Displacement /disturbance			In-combination		
	C	O	D	C	O	D	C	O	D
Migrating Red-throated Diver <i>Gavia stellata</i>	N/A	x (a)	N/A	x (b)	? (c)	N/A	? (d)	?(d)	N/A
<p>(a) The Applicant’s assessment excluded AEOI in relation to barrier effects and collision risk to RTD from the Proposed Development alone [APP-043 and APP-046]. NE have not expressed disagreement with these conclusions and this has not been a matter of discussion during the Examination.</p> <p>(b) The Applicant exclude AEOI in relation to displacement/disturbance to RTD during construction from cable laying and associated vessel activity from the Proposed Development alone. NE accepts this conclusion but remains concerned that there will be an adverse effect from cable laying in-combination with operational displacement from existing wind farms [RR-059]. Matters discussed during the Examination are signposted in this RIES at Paragraphs 4.2.8 and 4.2.26.</p> <p>(c) The Applicant did not assess operational displacement/disturbance effects on RTD [APP-043 and APP-046], however LSE had been identified from operational and maintenance vessels in its HRA screening [APP-044 and APP-045]. NE did not agree to exclude AEOI on displacement [REP1-058] on the basis of a number of concerns around the assessment of construction displacement effects and the interpretation of the implications for the OTE conservation objectives. The matters discussed in the Examination are signposted in this RIES in Paragraph 4.2.8.</p> <p>(d) The Applicant concluded that AEOI could be excluded in relation to barrier effects/collision risk and in relation to displacement/disturbance to RTD in-combination with other plans and projects. NE does not agree with the conclusions on disturbance/displacement [REP1-058, REP3-117, REP5-083]. Matters discussed during the Examination are signposted in this RIES in Paragraphs 4.2.8 to 4.2.30.</p> <p>The Applicant has submitted updated assessments and mitigation proposals into the Examination. The conclusions of AEOI in relation to in-combination displacement effects still remain in dispute at the time of writing. Matters discussed during the Examination are signposted in the RIES in Paragraph 4.2.31.</p>									



Stage 2 Matrix 5: Sandlings SPA (Project alone)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Habitat loss			Pollution effects			Displacement / disturbance		
	C	O	D	C	O	D	C	O	D
Breeding nightjar <i>Caprimulgus europaeus</i>	x (a)	? (b)	x (a)	? (c)	N/A	? (c)	? (d)	x (e)	x (d)
Breeding woodlark <i>Lullula arborea</i>	x (a)	? (b)	x (a)	? (c)	N/A	? (c)	? (d)	x (e)	x (d)

(a) The Applicant’s assessment concluded that AEOI could be excluded in relation to direct habitat loss during construction or decommissioning from the SPA due to the absence of suitable habitat and absence of records of both the qualifying features within the working area [APP-043 and APP-046]. The working methods to cross the SPA during construction have been subject to discussion during the Examination (RIES para 4.4.3 to 4.4.7). Following this, NE [REP5-084] has agreed AEOI can be excluded subject to conditions applicable to the crossing methods. Decommissioning effects have not been the subject of discussion during the Examination.

(b) The Applicant excluded AEOI during operation in relation to both qualifying features, relying on proposed habitat reinstatement measures [APP-043 and APP-046]. NE was not able to agree to exclude AEOI due to uncertainties around habitat mitigation [REP1-057]. Following discussion and submission by the Applicant of updated plans [REP3-031], NE’ position on AEOI has not changed due to remaining outstanding matters around the mitigation measures [REP4-092, REP5-084] (RIES Paragraphs 4.4.8 to 4.4.12).

(c) Indirect effects as a result of the crossing of the Hundred River, which is hydrologically linked to the SPA, were raised by the ExA in its ExQ1 [PD-018]. The Applicant’s assessment had not considered this matter, and this was addressed within the Examination (RIES para 4.4.16 to 4.4.22). The Applicant has produced an Outline Watercourse Crossing Method Statement [REP3-048]. However, NE noted [REP4-092] that this does not contain any assessment of hydrological effects on the SPA from the crossing of the Hundred River and cannot exclude AEOI until this is provided. Effects on the SPA from emissions to air during construction and decommissioning was raised by NE [RR-059] and the Local Planning Authorities. The Applicant responded [REP1-023] however conclusions on AEOI remain outstanding in



European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Habitat loss			Pollution effects			Displacement / disturbance		
	C	O	D	C	O	D	C	O	D
	<p>the absence of an assessment and appropriate mitigation for adverse effects [NE REP4-092, Applicant REP5-015]. Matters discussed during the Examination are signposted in this RIES in Paragraphs 4.4.23 and 4.4.24.</p> <p>(d) The Applicant excluded AEOI from disturbance during construction and decommissioning and has committed to a seasonal restriction to the works in order to avoid impacts on both qualifying features [APP-043 and APP-046]. NE supported this approach, however sought the appropriate controls to be included in the dDCO and outstanding matters remain in the content of the submitted draft SPA Crossing Method Statement [REP1-043]. These matters are signposted in this RIES in Paragraphs 4.4.13 to 4.4.15. Decommissioning effects have not been the subject of discussion during the Examination.</p> <p>(e) The Applicant concluded no AEOI would result from operational disturbance impacts on either of the qualifying features [APP-043 and APP-046]. This conclusion has not been disputed and has not been discussed in the Examination.</p>								



Stage 2 Matrix 6: Sandlings SPA (In-combination)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:								
	Habitat loss (in-combination)			Pollution effects (in-combination)			Displacement / disturbance (in-combination)		
	C	O	D	C	O	D	C	O	D
Breeding nightjar <i>Caprimulgus europaeus</i>	× (a)	× (a)	N/A	× (b)	N/A	N/A	× (a)	× (a)	N/A
Breeding woodlark <i>Lullula arborea</i>	× (a)	× (a)	N/A	× (b)	N/A	N/A	× (a)	× (a)	N/A
<p>(a) The Applicant’s assessment excluded AEOI from in-combination effects for both qualifying features from habitat loss and displacement/disturbance during construction and decommissioning [APP-043 and APP-046]. In-combination effects were considered for the Proposed Development in-combination with EA1N along with the assessment of project-alone effects, and are subject to the same matters as set out in Matrix 5. Potential additional disturbance effects from the proposed Sizewell C Nuclear Power Station were also assessed by the Applicant. The SoCG between the Applicant and NE records agreement on the conclusions of the in-combination assessment [REP1-057].</p> <p>(b) Pollution effects were not considered in the Applicant’s assessment and have not been subject to an in-combination assessment, however, the matters raised by Interested Parties have been raised against EA2 and EA1N and the outstanding actions highlighted in section 4.4 of this RIES apply to both projects in-combination.</p>									



Stage 2 Matrix 7: Southern North Sea SAC (Project alone)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:																	
	Disturbance from underwater noise			Disturbance from vessels			Collision risk			Changes to prey resource			Changes to water quality			Barrier effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Harbour Porpoise <i>Phocoena phocoena</i>	?(a)	x(b)	?(b)	x(b)	x(b)	x(b)	x(b)	x(b)	x(b)	x(b)	x(b)	x(b)	x(b)	N/A	x(b)	x(b)	N/A	N/A
<p>(a) The Applicant has concluded AEOI can be excluded in relation to underwater noise effects on harbour porpoise during construction, on the basis of embedded mitigation measures described in APP-043 and submitted within a draft MMMP [APP-591]. Additional mitigation through an IPSIP is also relied upon in the assessment. NE [RR-059] raised concerns regarding the control of UXO and piling events and on that basis did not agree to rule out AEOI [REP3-118]. Concerns were also raised by NE [REP3-118], the MMO [REP4-081] and TWT [REP4-125] regarding the use of SIP to manage project-alone effects (see SNS SAC in-combination matrix). The MMMP has been updated by the Applicant and further information submitted during the Examination [REP1-038] in response to comments from Interested Parties, and it is understood that agreement can be reached that AEOI can be excluded once control measures and the mechanism for securing these within the dDCO and DMLs is agreed. The matters discussed during the Examination are signposted in this RIES, in Paragraphs 4.3.2 to 4.3.20. Until these matters are resolved, NE has stated that it cannot agree to exclude AEOI.</p> <p>(b) The Applicant' assessment [APP-043 and APP-046] excluded AEOI for all of these impact-effect pathways. These conclusions have not been subject to dispute and have not been discussed in the Examination.</p>																		



Stage 2 Matrix 8: Southern North Sea SAC (In-combination)

European site feature(s)	Adverse Effect on Integrity due to East Anglia TWO Offshore Windfarm:																	
	Disturbance from underwater noise			Disturbance from vessels			Collision risk			Changes to prey resource			Changes to water quality			Barrier effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Harbour Porpoise <i>Phocoena phocoena</i>	?	x	?	x	x	x	x	x	x	x	x	x	x	N/A	x	x	N/A	N/A
	(a)	(b)	(b)	(a)	(b)	(b)	(a)	(b)	(b)	(a)	(b)	(b)	(a)		(b)	(a)		
<p>(a) The Applicant has concluded AEOI can be excluded in relation to in-combination construction effects, considering that the implementation of the final SIP can provide adequate mitigation for any in-combination construction effects across projects in the region. Matters were raised by NE [RR059], the MMO and TWT in relation to the IPSIP which were the subject of discussion during the Examination and are signposted in this RIES in Paragraphs 4.3.2 to 4.3.20. Until these matters are resolved, NE has stated that it cannot agree to exclude AEOI.</p> <p>(b) The Applicant's assessment [APP-043 and APP-046] excluded AEOI for all of these impact-effect pathways. These conclusions have not been subject to dispute and have not been discussed in the Examination.</p>																		