



The Planning Inspectorate
Yr Arolygiaeth Gynllunio

REPORT on the IMPLICATIONS for EUROPEAN SITES

Proposed Thanet Extension Offshore Wind Farm

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

Planning Inspectorate Reference: EN010084

14 May 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 Vattenfall Wind Power Ltd (the Applicant) has applied to the Secretary of State for a development consent order (DCO) under section 37 of the Planning Act 2008 (PA2008) for the proposed Thanet Extension Offshore Wind Farm (the Proposed Development). The Secretary of State 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 Secretary of State as to the decision to be made on the application.
- 1.1.2 The relevant Secretary of State is the competent authority for the purposes of the Habitats Directive¹, the Habitats Regulations² and the Offshore Marine Regulations³ for applications submitted under the PA2008 regime. The findings and conclusions on nature conservation issues reported by the ExA will assist the Secretary of State in performing their duties under the Habitats Regulations and the Offshore Marine Regulations.
- 1.1.3 This report compiles, documents and signposts information provided within the DCO application, and the information submitted throughout the Examination by both the Applicant and Interested Parties (IPs), up to Deadline 5A of the Examination in relation to potential effects to European sites⁴. 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 published on the National Infrastructure Planning website at the following link:
- <https://infrastructure.planninginspectorate.gov.uk/document/EN010084-000737>
- 1.1.4 It is issued to ensure that IPs, including the Joint Nature Conservation Committee (JNCC) and Natural England (NE) as the relevant statutory nature conservation bodies, 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 their 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 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as codified) (the 'Habitats Directive').

² The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations).

³ The Conservation of Offshore Marine Habitats and Species Regulations 2017 (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).

⁴ The term European sites in this context includes Sites of Community Importance (SCIs), Special Areas of Conservation (SACs) and candidate SACs (cSACs), Special Protection Areas (SPAs), possible SACs, potential SPAs (pSPA), Ramsar sites, proposed Ramsar sites, and any sites identified as compensatory measures for adverse effects on any of the above. For a full description of the designations to which the Habitats Regulations apply, and/ or are applied as a matter of Government policy, see PINS Advice Note 10.

- 1.1.5 The Applicant has identified potential impacts on European sites in other European Economic Area (EEA) States [**REP2-004**, **REP2-018** and **REP2-019**]. Only UK European sites are addressed in this report.

1.2 The Crown Estate Lease for the Proposed Development

- 1.2.1 At the time of writing, the Applicant has not been granted any property rights by The Crown Estate in relation to the seabed required for the Proposed Development. It is not expected that an Agreement for Lease will have been awarded prior to the closure of this Examination on 11 June 2019 [**REP3-088** and **REP5-054**].
- 1.2.2 On 7 February 2017, The Crown Estate issued a notice setting out the application criteria for offshore wind project extensions. In addition to an application for the extension of the existing Thanet Offshore Wind Farm, seven other applications were received [**REP3-088**]. The Crown Estate has obligations under the Habitats Regulations to consider the implications on European sites of plans relating to offshore wind developments before deciding to give a consent, permission or authorisation for that plan.
- 1.2.3 The potential to extend the existing Thanet Offshore Wind Farm (in the form of the Proposed Development) is therefore currently the subject of a plan-level HRA for up to eight offshore wind farm extension projects. The Crown Estate is the competent authority for the plan-level HRA and that process is not due to be completed until after the closure of this DCO Examination. The plan-level HRA includes a potential lease area with boundaries that are consistent with the DCO offshore order limits and which would allow for an extension of up to 300 MW or such other maximum capacity as is agreed. The Crown Estate has indicated [**REP3-088** and **REP5-054**] that no final generating capacity has been determined at this stage.
- 1.2.4 Consequently, the outcomes of the plan-level HRA are not available to inform this Examination, nor are they matters directly within the scope of this Examination. The Secretary of State's duties as the competent authority in relation to the Proposed Development extend to consideration of the outcomes of the plan-level HRA insofar as they may consider it relevant to do so.

1.3 Documents used to inform this RIES

- 1.3.1 The Applicant's DCO application concluded that there was potential for Likely Significant Effects (LSE), either alone or in-combination with other plans or projects, on 13 UK European sites.
- 1.3.2 As such, the Applicant provided a Report to Inform an Appropriate Assessment (RIAA), concluding that there would be no adverse effect on the integrity (AEoI) of any European site, either alone or in-combination with other plans or projects [**APP-031**, superseded by **REP2-018** and **REP2-019**]. Accompanying screening and integrity matrices were provided in [**APP-033**, superseded by **REP2-004**].
- 1.3.3 For those European sites and qualifying features where the Applicant's conclusions regarding AEoI have been disputed or queried during the Examination, the Applicant's integrity matrices have been updated by the ExA, with the support of the Planning Inspectorate's Environmental Services Team, using relevant documents listed in the [Examination Library](#) for the Proposed

Development. The revised Stage 2 integrity matrices are included as Annex 2 to this RIES. Since the Applicant's Stage 1 screening matrices [**REP2-004**] have not been disputed during the Examination, they have not been revised.

Changes to the Proposed Development during the Examination

- 1.3.4 At the point at which the DCO application was submitted, there were three options for the installation of cables at the landfall location (all within the Pegwell Bay Country Park). The options are described in paragraphs 1.3.3 and 1.5.6 – 1.5.9 of [**APP-057**] and broadly comprise:
- **Landfall Option 1:** Use of Horizontal Directional Drilling (HDD) from the Pegwell Bay Country Park to the intertidal mudflats;
 - **Landfall Option 2:** A seaward extension of the existing sea wall to allow the export cables to interface from burial within the intertidal mudflat and saltmarsh to a surface laid berm within the Pegwell Bay Country Park; and
 - **Landfall Option 3:** Open trenching through the existing sea wall and Pegwell Bay Country Park.
- 1.3.5 Concerns over the proposed Landfall Option 2 were raised by a number of IPs as part of their relevant representations (RRs), including those from:
- Kent County Council [**RR-038**];
 - Environment Agency (EA) [**RR-043**];
 - Kent Wildlife Trust (KWT) [**RR-048**];
 - NE [**RR-053**]; and
 - Royal Society for the Protection of Birds (RSPB) [**RR-057**]⁵.
- 1.3.6 Following these comments and in response to questions from the ExA [**PD-012**], the Applicant elected to remove Landfall Option 2 from the Proposed Development [**REP1-014**].
- 1.3.7 The Applicant provided a revised RIAA [**REP2-018** and **REP2-019**] at Deadline 2, superseding [**APP-031**]. The removal of Landfall Option 2 is set out in section 1.3 and Tables 4.1 and 4.2 of the revised RIAA [**REP2-018** and **REP2-019**]. Revised screening and integrity matrices [**REP2-004**] were also submitted to the ExA at Deadline 2, superseding those presented as part of the application documents [**APP-033**].
- 1.3.8 In the Project Description; Site Selection and Alternatives; and Saltmarsh Statement of Common Ground (SoCG) between NE and the Applicant [Table 3, **REP5-075**], NE agreed that the removal of Landfall Option 2 had addressed its key concerns with regard to landfall designs. Similarly, KWT [**REP3-038**] and the EA [**REP3-036**] welcomed the removal of Landfall Option 2 [**REP3-038**].
- 1.3.9 The removal of Landfall Option 2 was discussed during Issue Specific Hearing (ISH)³ [**EV-026**] and the Applicant's position was that this should be considered as a non-material change to the description of the Proposed Development

⁵ The RSPB's RR [**RR-057**] explained that it comprised the RSPB's final submission to the Examination. No further substantive submissions from the RSPB have been provided, to date.

[**REP1-014**]. The ExA has received no submissions disagreeing with that position and the Examination has proceeded on the basis that Landfall Option 2 has been removed. For clarity, references to the Proposed Development within this RIES relate to the project description excluding Landfall Option 2.

- 1.3.10 At Deadline 1, the Applicant submitted a revised draft DCO (dDCO) [revision A, **REP1-068**] which included a Cable Exclusion Zone⁶ as a condition in the deemed marine licence (DML) for transmission assets. The Cable Exclusion Zone, which would ensure that no cabling is undertaken within the Thanet Coast SAC, was reflected in the revised RIAA submitted at Deadline 2 [**REP2-018** and **REP2-019**]. For clarity, references to the Proposed Development within this RIES relate to the project description including the Cable Exclusion Zone. The Cable Exclusion Zone is included in schedule 12, part 4 (condition 21) of the Applicant's Deadline 5 iteration of the dDCO [**REP5-019**].
- 1.3.11 At Deadline 4 of the Examination the Applicant submitted a proposed material change to the Proposed Development, to include a Structures Exclusion Zone (SEZ) to the west of the proposed offshore array area [**REP4-001**]. Within the SEZ, which is illustrated on Figure 1 of [**REP4-018**], the construction of certain structures of the Proposed Development (including wind turbine generators, any offshore substation and any meteorological mast) would not be permitted [**REP4-018**]. The SEZ was requested to address shipping and navigation concerns raised by IPs. At Deadline 4, the Applicant also submitted its initial review of the implications for the ES and RIAA from the introduction of the SEZ [**REP4-027**]. At Deadline 4B, the Applicant expanded on this information and provided an Addendum to the RIAA [**REP4B-015**], which focussed on the implications of the SEZ for the Outer Thames Estuary Special Protection Area (SPA). NE has agreed that the only sections of the revised RIAA [**REP2-018** and **REP2-019**] which are affected by the introduction of the SEZ (aside from the project description) are those relating to the Outer Thames Estuary SPA [**REP5-064**]. The proposed SEZ was reflected in a revised dDCO [**REP5-019**].
- 1.3.12 The ExA formally accepted the Applicant's SEZ material change request on 9 April 2019 [**PD-014**]. For clarity, references to the Proposed Development within this RIES relate to the project description including the SEZ.
- 1.3.13 The Applicant commenced a consultation on the proposed SEZ material change documents (including the RIAA Addendum [**REP4B-015**]) on 25 April 2019. The consultation was ongoing at the time of publication of this RIES [**AS-014**].

1.4 Structure of this RIES

1.4.1 The remainder of this report is structured as follows:

- **Section 2** identifies the European sites that have been considered within the DCO application and during the Examination period, up to Deadline 5A of the Examination. It provides an overview of the issues that have emerged during the Examination.
- **Section 3** identifies the European sites and qualifying features for which the Applicant has identified an LSE, either alone or in-combination with

⁶ Referred to as a 'Cable Exclusion Zone' in the dDCO and as a 'Cable Exclusion Area' in the RIAA; the ExA understands these to be one and the same. For consistency purposes, the term 'Cable Exclusion Zone' has been used throughout this RIES and accompanying matrices.

other plans and projects. This section also identifies matters relating to the Applicant's assessment of LSE which have been discussed during the Examination.

- **Section 4** identifies the European sites and qualifying features which have been considered in terms of AEoI, either alone or in-combination with other plans and projects. This section also identifies where IPs have disputed or queried the Applicant's conclusions during the Examination.
- **Annex 1** lists the European sites and qualifying features identified by the Applicant for consideration in the screening assessment.
- **Annex 2** comprises Stage 2 matrices for those European sites and qualifying features for which the Applicant's conclusions were disputed in relation to AEoI. They summarise the evidence submitted by the Applicant and IPs up to Deadline 5A of the Examination.

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 sites considered within the Applicant's assessment.
- 2.1.2 The Applicant undertook an initial HRA screening exercise which is reported in [APP-032] and in the screening matrices [APP-033, superseded by REP2-004]. The Applicant subsequently revisited the conclusions of [APP-032] and updated these where relevant, as reported in Section 7 of the RIAA [REP2-018 and REP2-019]. The UK European sites and qualifying features considered in the Applicant's screening exercise are listed in Annex 1 of this RIES.
- 2.1.3 Through the screening exercise, the Applicant identified European sites and qualifying features with potential for LSE from the Proposed Development alone, as summarised in Table 7.3 of the RIAA [REP2-018 and REP2-019]. NE has agreed that the RIAA has identified all relevant features of the European sites that may be affected by the Proposed Development [Table 3, REP5-077 and REP5-076] and that "*The screening of potential likely significant effects, sites and species in relation to Thanet Extension is adequate and appropriate*" [REP5-076].
- 2.1.4 For the purposes of this RIES, effects are not reported for the Flamborough Head and Bempton Cliffs SPA or the Flamborough and Filey potential SPA (pSPA). These sites have now been superseded by confirmation of the Flamborough and Filey Coast SPA, as reflected in the Applicant's revised RIAA [REP2-018 and REP2-019] and revised matrices [REP2-004]. This point was also addressed by NE and the Applicant in response to the ExA's first written questions (ExQ1) (Q1.1.42, [REP1-024] and [REP1-116] respectively). NE confirmed that "*The applicants have identified this within the Report to Inform Appropriate Assessment and as the site is treated equally, as if it was fully designated or not, there should be no implications on the assessment or conclusions the applicants have reached*" [REP1-116].
- 2.1.5 Similarly, effects are not reported in this RIES for the Southern North Sea candidate SAC (cSAC). Effects are reported instead for the Southern North Sea SAC, which was formally designated in February 2019⁷ (during the Examination). This is discussed further in Section 4 of this RIES.

Study areas

- 2.1.6 As explained in Section 7.3 of the RIAA [REP2-018 and REP2-019], the Applicant applied the following study areas for each receptor group concerned:
- Subtidal and intertidal benthic habitats:
 - European sites with a physical overlap with the application site; and
 - European sites within the maximum range of relevant effect (defined as up to 14km from the application site).

⁷ <http://jncc.defra.gov.uk/page-7243>

- Marine mammals:
 - European sites with harbour seal as a qualifying feature - 120km from the application site;
 - European sites with grey seal as a qualifying feature - 145km from the application site; and
 - European sites with harbour porpoise as a qualifying feature - 26km from the application site.
- Onshore biodiversity:
 - All European sites within 2km of the application site; and
 - Onshore European sites of ornithological importance, up to 20km from the application site.
- Offshore ornithology:
 - European sites within the proposed array area and a 4km buffer around it.

2.2 Potential Impacts

2.2.1 The following potential impacts were screened in for LSE by the Applicant:

Offshore (summarised from Table 7.3 of the RIAA [**REP2-018** and **REP2-019**]):

- Subtidal and intertidal benthic habitats:
 - Temporary habitat loss/ disturbance;
 - Increases in suspended sediments, with subsequent deposition;
 - Accidental pollution;
 - Changes to physical processes;
 - Introduction of hard substrate; and
 - Electro Magnetic Fields (EMF)⁸.
- Marine mammals:
 - Increase in underwater noise;
 - Long-term physical loss of habitat;
 - Collision risk;
 - Increases in suspended sediments, with subsequent deposition;
 - Accidental pollution; and

⁸ Impacts from EMF were originally screened in for LSE in Table 7.3 of [**APP-032**]. Following refinements to the OECC during Examination (specifically the introduction of the Cable Exclusion Zone), EMF was subsequently screened out for LSE. See paragraph 7.5.13 of [**REP2-018** and **REP2-019**].

- Changes in prey availability and behaviour.
- Ornithology:
 - Direct disturbance and displacement;
 - Collision risk;
 - Barrier effect; and
 - Changes in prey availability and behaviour.

Onshore (summarised from paragraph 7.5.37 of the RIAA [**REP2-018** and **REP2-019**]):

- Habitat loss/ disturbance;
- Increases in suspended sediments and deposition;
- Noise and visual disturbance;
- Displacement of recreational visitors to Pegwell Bay Country Park;
- Accidental pollution; and
- Spread of invasive non-native species (INNS).

2.3 HRA Matters Considered During the Examination

2.3.1 HRA matters raised by the ExA, NE and other IPs and discussed during the Examination include:

- The Applicant's initial conclusion that accidental pollution events would not result in LSE (due to reliance on in-built mitigation measures), in light of the European Court of Justice ruling in *'People Over Wind and Peter Sweetman v Coillte Teoranta'*;
- Permanent loss of saltmarsh under Landfall Option 2 and resultant impacts on the Thanet Coast and Sandwich Bay SPA and Ramsar site;
- Impacts to the chalk reef qualifying feature of the Thanet Coast SAC;
- In-combination effects with other dredging and disposal activities on subtidal and benthic intertidal habitats, particularly in relation to the Thanet Coast SAC;
- Construction noise effects on the harbour porpoise qualifying feature of the Southern North Sea SAC (alone and in-combination) and reliance on mitigation measures including Outline Site Integrity Plans (SIPs) to support conclusions in the assessment of AEoI;
- In-combination assessment of displacement impacts (particularly in relation to the red throated diver qualifying feature of the Outer Thames Estuary SPA); and

- In-combination collision risk modelling (particularly in relation to mortality of kittiwake and gannet of the Flamborough and Filey Coast SPA).

2.3.2 These matters are discussed in Sections 3 and 4 of this RIES, as appropriate.

3 STAGE 1: LIKELY SIGNIFICANT EFFECTS

3.1 The Applicant's Assessment

- 3.1.1 The Applicant has described how they have determined what would constitute a 'significant effect' within the RIAA [**REP2-018** and **REP2-019**]. This follows European Commission (EC) guidance on habitats assessment, including EC Guidance document: 'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2018)' and EC Guidance document: 'Assessment of plans and projects significantly affecting Natura 2000 sites (2001)'.
- 3.1.2 As explained in Section 2 above, the Applicant's conclusions on LSE from the Proposed Development alone are presented in Section 7 of the RIAA [**REP2-018** and **REP2-019**].
- 3.1.3 Section 8 of the RIAA [**REP2-018** and **REP2-019**] considers LSE in-combination with other plans and projects. The plans and projects that have been included in the Applicant's in-combination assessment are listed in the following tables in the RIAA [**REP2-018** and **REP2-019**]:

Offshore

- Table 8.2 – projects included in marine mammal in-combination assessment;
- Table 8.4 – all projects identified for inclusion in the offshore in-combination assessment. Two types of projects have been considered: wind farms and offshore cables. Other types of project have been discounted, as explained in paragraph 8.5.4 of the RIAA;
- Table 8.5 - offshore cable projects included in the in-combination assessment (disturbance and displacement during construction);
- Table 8.6 - offshore wind farm projects included in the in-combination assessment (disturbance and displacement during operation and maintenance); and
- Table 8.7 – offshore wind farm projects included in the in-combination assessment (collision risk during operation and maintenance).

Onshore

- Table 8.8 - plans and projects identified for inclusion in the onshore in-combination assessment (habitat loss or change; displacement of recreational users; and visual or noise disturbance). All other projects have primarily been screened out of consideration in the in-combination assessment, as explained in paragraph 8.6.5 of the RIAA.

3.2 Examination

- 3.2.1 Table 3.1 of this RIES summarises the outcome of the screening assessment reported in the Applicant's RIAA [**REP2-018** and **REP2-019**]. The Examination

(to date) has generally focussed on whether AEoI of the European sites can be ruled out; the Applicant's conclusions on LSE have been largely undisputed by NE and other IPs. As such, the Applicant's screening matrices presented in [REP2-004] have not been revised by the ExA.

3.2.2 The following matters relating to the Applicant's assessment of LSE have been discussed during the Examination:

Removal of Landfall Option 2

3.2.3 As discussed in paragraphs 1.3.4-1.3.9 of this RIES, the Applicant elected to remove Landfall Option 2 from the design envelope of the Proposed Development [REP1-014]. As such, no further consideration is made in this section of the RIES around any concerns raised in respect of Landfall Option 2 and the Applicant's conclusions of LSE.

Sweetman II

3.2.4 In ExQ 1.1.3 [PD-012]), the Applicant was asked to explain the apparent reliance in [APP-031] on what it described as 'embedded mitigation' in relation to pollution prevention measures for subtidal and benthic intertidal habitats, marine mammals and onshore biodiversity to rule out LSE on European sites and their qualifying features screened into the assessment. This appeared to be contradictory to the outcomes of the European Court of Justice ruling in '*People Over Wind and Peter Sweetman v Coillte Teoranta*' (referred to as 'Sweetman II', as cited by the Applicant in paragraph 2.1.6 of [APP-031]). In response [page 13, REP1-024], the Applicant confirmed that it was revising the RIAA to include "*amendments in further response to the evolving understanding Sweetman II judgment. These amendments include ruling accidental pollution in for Likely Significant Effect (LSE) for appropriate sites/ features*".

3.2.5 As a result, the revised RIAA [REP2-018 and REP2-019] concluded that LSE from accidental pollution at all stages of the Proposed Development would not arise due to the control measures and mitigation in place, but that "*to ensure full compliance with Sweetman II these measures have not been taken into consideration during screening on a precautionary basis*". This is discussed in Tables 4.2 and 7.3 of [REP2-018].

3.2.6 The European sites and qualifying features affected by the revisions to the Applicant's RIAA in this regard (i.e. where LSE is not ruled out (by comparison of Table 7.3 in [APP-031] and [REP2-018] respectively)) are:

- Thanet Coast SAC (screening matrix 1 of [REP2-004]):
 - Chalk reefs;
 - Submerged or partially submerged sea caves;
- Margate and Long Sands SAC (screening matrix 3 of [REP2-004]):
 - Sand banks which are slightly covered by sea water all the time;
- Thanet Coast and Sandwich Bay SPA (screening matrix 4 of [REP2-004]):
 - Ruddy turnstone (non-breeding);
 - European golden plover (Non-breeding);

- Thanet Coast and Sandwich Bay Ramsar site (screening matrix 4 of [REP2-004]):
 - Ruddy turnstone (non-breeding); and
 - Wetland invertebrate assemblage.

3.2.7 Sections 11 and 12 of [REP2-018 and REP2-019] therefore present information to inform an appropriate assessment addressing accidental pollution in respect of these European sites and features. This is discussed below in Section 4 of this RIES, as appropriate.

3.2.8 In response to the ExQ1, NE advised that if the Project Environment Management Plan (PEMP) is required to reach a conclusion of no LSE from pollution, the relevant sites and features should be carried through to appropriate assessment [Q1.1.3, REP1-116]. NE confirmed [Q1.1.3, REP1-116] that the concerns expressed in its RR [RR-053] in relation to the Applicant's conclusions in terms of accidental pollution related to the Thanet Coast and Sandwich Bay SPA and Ramsar site (from the Proposed Development alone).

In-combination assessment

3.2.9 As noted in ExQ1 [Q1.1.3, PD-012], the Applicant's HRA screening report [Section 9, APP-032] concluded that "*A full assessment of in-combination effects will be undertaken as part of the RIAA and therefore is not presented in this Report*". The Applicant was asked to explain how in-combination effects had been assessed at the screening stage – particularly for those sites where no LSE had been concluded [Q1.1.3, part e, PD-012].

3.2.10 The Applicant explained that Section 8 of the RIAA [APP-031, superseded by REP2-018 and REP2-019] provided further detail as to the approach taken to screening in-combination, together with the plans and projects identified per receptor. The Applicant clarified [REP1-024] that even if the European site/feature had been screened out from LSE for the project alone, these sites/features were still considered for LSE in-combination. The Applicant considered [REP1-024] that there was no potential for in-combination effects where no LSE was predicted for the Proposed Development alone - with the exception of marine mammals (as explained in paragraph 8.3.1 of the RIAA [REP2-018 and REP2-019]).

3.2.11 NE did not comment on this point [ExQ 1.1.3, part f, REP1-116].

Implications of SEZ

3.2.12 As noted in Section 1 of this RIES, a consultation on the proposed SEZ material change documents (including the RIAA Addendum) was ongoing at the time of publication of this RIES. At the time of writing, there is no indication that the RIAA Addendum will affect any IPs views on the conclusions around the Applicant's LSE screening process.

3.3 Summary of HRA Screening Outcomes during the Examination

- 3.3.1 Of the European sites and qualifying features considered for screening (see Annex 1 of this RIES), the Applicant concluded in [**REP2-018** and **REP2-019**] that there is potential for LSE, either alone or in-combination with other plans or projects, on the qualifying features of 13 UK European sites (as listed in Table 3.1 below). The locations of these European sites relative to the application site are illustrated on Figures 9.1 – 9.5 and 9.10 - 9.17 of the RIAA [**REP2-018** and **REP2-019**]. These sites are discussed further in Section 4 to this RIES.

Table 3.1: European sites, qualifying features and potential impacts for which the Applicant has identified a LSE (summarised from Table 7.3 and Section 9 of [REP2-018 and REP2-019])

European Site	Qualifying feature/s	Impact/s
Thanet Coast SAC (section 9.2 of [REP2-018 and REP2-019])	Chalk reefs	<ul style="list-style-type: none"> Habitat loss and habitat disturbance (construction ('C'), operation & maintenance ('O&M') and decommissioning ('D')); Increased suspended sediment and deposition (during C, O&M, D); Changes to physical processes (O&M); and Accidental pollution (C, O&M, D).
	Submerged or partially submerged sea caves ⁹	<ul style="list-style-type: none"> Accidental pollution (C, O&M, D).
Margate and Long Sands SAC (section 9.3 of [REP2-018 and REP2-019])	Sand banks which are slightly covered by sea water all the time	<ul style="list-style-type: none"> Increased suspended sediment, deposition and smothering (C, O&M, D); Changes to physical processes (O&M); and Accidental pollution (C, O&M, D).
Thanet Coast and Sandwich Bay SPA (section 9.4 of [REP2-018 and REP2-019])	Ruddy turnstone (non-breeding); and European golden plover (non-breeding)	<ul style="list-style-type: none"> Temporary habitat loss or disturbance to intertidal habitats (including saltmarsh) used by qualifying features (C, O&M, D); Increased suspended sediment, deposition and smothering (C, O&M, D); Noise and visual disturbance (C, O&M, D); Displacement of recreational users of Pegwell Bay Country Park (leading to disturbance) (C, D);

⁹ Paragraph 9.2.6 of [REP2-018 and REP2-019] states that potential for LSE is for the chalk reef feature only. However, matrix 1 of [REP2-004] also presents LSE for the sea caves feature associated with accidental pollution. NE has agreed that there would be no LSE on the 'submerged or partially submerged sea caves' qualifying feature in response to ExQ 1.1.6 [REP1-116].

European Site	Qualifying feature/s	Impact/s
		<ul style="list-style-type: none"> • Accidental pollution (C, O&M, D); • Potential for the spread of INNS affecting intertidal habitats (C, D); and • In-combination effects (C, O&M, D)¹⁰.
<p>Thanet Coast and Sandwich Bay Ramsar site (section 9.5 of [REP2-018 and REP2-019])</p>	<p>Criterion 2: Wetland invertebrate assemblage; and Criterion 6: Ruddy turnstone (non-breeding)¹¹</p>	<ul style="list-style-type: none"> • Temporary habitat loss or disturbance to intertidal habitats (including saltmarsh) used by qualifying features (C, O&M, D); • Possible loss (temporary) of habitats supporting the three wetland invertebrate assemblage species <i>Didineis lunicornis</i>, <i>Ectemnius ruficornis</i> and <i>Eluma caelata</i> (C, O&M, D); • Increased suspended sediment, deposition and smothering (effect on intertidal habitats used by qualifying species) (C, O&M, D); • Noise and visual disturbance to qualifying bird species (C, O&M, D); • Possible displacement of recreational users of Pegwell Bay Country Park leading to disturbance of qualifying bird species elsewhere within the Ramsar site (C, D); • Accidental pollution (C, O&M, D); • Potential for the spread of INNS affecting intertidal habitats (C, D); and

¹⁰ In-combination effects for this site are not referenced in Section 9.4 but are considered in Section 12.5 [REP2-018 and REP2-019] - so included here for completeness.

¹¹ Footnote i), Matrix 4, page 24 of [REP2-004] (Thanet Coast and Sandwich Bay Ramsar site) predicts LSE for physical processes during operation to the wetland invertebrate assemblage. This is not listed in paragraph 9.5.4 of [REP2-018 and REP2-019], and based on the text within footnote i), the ExA understands that this prediction of LSE is made in error.

European Site	Qualifying feature/s	Impact/s
		<ul style="list-style-type: none"> In-combination effects (C, O&M, D)¹².
Southern North Sea SAC (section 9.6 of [REP2-018 and REP2-019])	Harbour porpoise	<ul style="list-style-type: none"> Increase in underwater noise alone and in-combination (C, D); and Accidental pollution events (C, O&M, D).
Outer Thames Estuary SPA (section 9.10 of [REP2-018 and REP2-019]) ^{13,14}	Red throated diver (non-breeding)	<ul style="list-style-type: none"> Disturbance and displacement (C, O&M, D) alone and in-combination.
	Common tern (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) (Proposed Development alone).
	Little tern (breeding)	
Flamborough and Filey Coast SPA (section 9.14 of [REP2-018 and REP2-019]) ¹⁵	Gannet (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) alone and in-combination.
	Kittiwake (breeding)	
	Guillemot (breeding)	<ul style="list-style-type: none"> Disturbance and displacement (C, O&M, D) alone and in combination.
	Razorbill (breeding)	

¹² In-combination effects for this site are not referenced in Section 9.5 but are considered in Section 12.5 [REP2-018 and REP2-019] - so included here for completeness.

¹³ LSE concluded for barrier effects on common tern and little tern in matrix 17 of [REP2-014], but not listed in section 9.10 of [REP2-018 and REP2-019]. See also footnote 14.

¹⁴ In response to the ExQ1 [Q1.1.16, REP1-024] the Applicant explained that "the significance of the barrier effect for all species assessed was 'negligible adverse'" (paragraphs 4.1.153 – 4.1.155 of [APP-045]). NE's response to the Applicant's response to Q1.1.6 [REP2-045] agrees that the significance of barrier effects is negligible. Sections 10, 11 and 12 of [REP2-018 and REP2-019] contain no information to inform an appropriate assessment of barrier effects for any European sites or features.

¹⁵ LSE concluded for barrier effects on Gannet, Kittiwake, and breeding bird assemblage in matrix 21 of [REP2-004], but not listed in section 9.14 of [REP2-018 and REP2-019]. See also footnote 14.

European Site	Qualifying feature/s	Impact/s
	Breeding seabird assemblage (gannet, kittiwake, guillemot and razorbill only)	<ul style="list-style-type: none"> As above for species concerned.
Northumberland Marine SPA (section 9.16 of [REP2-018 and REP2-019])	Guillemot (breeding)	<ul style="list-style-type: none"> Disturbance and displacement (C, O&M, D) alone and in-combination¹⁶.
	Breeding seabird assemblage (guillemot only)	
Farne Islands SPA (section 9.17 of [REP2-018 and REP2-019]) ¹⁷	Guillemot (breeding)	<ul style="list-style-type: none"> Disturbance and displacement (C, O&M, D) alone and in-combination¹⁶.
	Breeding seabird assemblage (guillemot only)	
St. Abb's Head to Fast Castle SPA [section 9.15 of [REP2-018 and REP2-019]] ¹⁸	Kittiwake (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) alone and in-combination.
	Guillemot (breeding)	<ul style="list-style-type: none"> Disturbance and displacement (C, O&M, D) alone and in-combination¹⁶.
	Razorbill (breeding)	

¹⁶ Whilst the Applicant has screened in impacts from disturbance and displacement to the qualifying features of these SPAs (alone and in-combination), paragraphs 12.4.1-12.4.25 [REP2-018 and REP2-019] (considering disturbance and displacement effects) do not consider in-combination effects at these European sites.

¹⁷ The ExA notes that roseate tern is listed on the Conservation Objectives for the Farne Islands SPA as a qualifying feature. Section 9.17 of [REP2-018 and REP2-019] and screening matrix 23 of [REP2-004] do not include roseate tern as a separate qualifying feature of the SPA, although it is noted as part of the breeding seabird assemblage. However, NE has agreed that the RIAA has identified all relevant features of the European sites that may be affected by the Proposed Development [Table 3, REP5-077 and REP5-076]. Similarly, the conclusions of no LSE on the other tern species of the Farne Islands SPA summarised in matrix 23 of [REP2-004] have not been disputed by any IPs.

¹⁸ LSE concluded for barrier effects on kittiwake, and breeding bird assemblage in matrix 24 of [REP2-004], but not listed in section 9.15 of [REP2-018 and REP2-019]. See also footnote 14.

European Site	Qualifying feature/s	Impact/s
	Breeding seabird assemblage (kittiwake, guillemot and razorbill only)	<ul style="list-style-type: none"> As above for species concerned.
Foulness (Mid-Essex Coast Phase 5) SPA [section 9.11 of [REP2-018 and REP2-019]	Sandwich tern (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) (Proposed Development alone).
Alde-Ore Estuary SPA [section 9.12 of [REP2-018 and REP2-019] ¹⁹	Lesser black-backed gull (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) alone and in-combination.
Alde-Ore Estuary Ramsar site [section 9.13 of REP2-018 and REP2-019] ¹⁹	Criterion 6: Lesser black-backed gull (breeding)	<ul style="list-style-type: none"> Collision mortality (O&M) alone and in-combination.
	Breeding wetland bird assemblage (lesser black-backed gull only)	

¹⁹ LSE concluded for barrier effects on lesser black-backed gull in matrices 19 and 20 of **[REP2-004]**, but not listed in section 9.12/ 9.13 of **[REP2-018 and REP2-019]**. See also footnote 14.

4 STAGE 2: ADVERSE EFFECTS ON INTEGRITY

4.1 Conservation Objectives

- 4.1.1 The conservation objectives for all of the European sites taken forward to the integrity test stage and discussed in this section of the report were provided by the Applicant in Section 9 of the RIAA [**REP2-018** and **REP2-019**].
- 4.1.2 As discussed in paragraph 2.1.4 of this RIES, the Flamborough Head and Bempton Cliffs SPA and the Flamborough and Filey pSPA have been superseded by the formal designation of the Flamborough and Filey Coast SPA in August 2018, as reflected in the Applicant's revised RIAA [paragraph 7.6.5, **REP2-018** and **REP2-019**] and revised matrices (matrix 36 of [**REP2-004**]).
- 4.1.3 Similarly, as discussed at paragraph 2.1.5 of this RIES, the Southern North Sea SAC was formally designated in February 2019. The assessment in the RIAA is based on the draft conservation objectives for the cSAC, as set out in paragraph 9.6.9 [**REP2-018** and **REP2-019**]. The ExA is aware that the conservation objectives for the Southern North Sea SAC became available on JNCC's website in March 2019⁷, subsequent to submission of the revised RIAA [**REP2-018** and **REP2-019**]. This is discussed in greater detail later in this section of the RIES.
- 4.1.4 In a number of instances, the ExA notes that NE has published updated versions of the conservation objectives documents cited in the revised RIAA [**REP2-018** and **REP2-019**]. For example, whilst the revised RIAA references conservation objectives for Thanet Coast SAC "*as made in 2014*", an updated version of the conservation objectives was published on NE's website in November 2018. This applies to the following European sites considered in the RIAA [**REP2-018** and **REP2-019**]:
- Thanet Coast SAC;
 - Margate and Long Sands SAC;
 - Thanet Coast and Sandwich Bay SPA;
 - Outer Thames Estuary SPA;
 - Flamborough and Filey Coast SPA;
 - Northumberland Marine SPA;
 - Farne Islands SPA;
 - Foulness (Mid-Essex Coast Phase 5) SPA; and
 - Alde-Ore Estuary SPA.
- 4.1.5 The ExA understands that the updated conservation objective documents reflect the consolidation of the Habitats Regulations in 2017 and do not materially change the conservation objectives of the European sites.

4.2 The Integrity Test

No Adverse Effects on Site Integrity

- 4.2.1 The Applicant considered the potential for AEoI from the Proposed Development alone within Section 11 of the RIAA [**REP2-018** and **REP2-019**]. Section 12 of the RIAA considered the potential for AEoI in-combination; the other plans and projects considered in the in-combination assessment are set out in Table 12.1 [**REP2-018** and **REP2-019**].
- 4.2.2 The Applicant concluded that the Proposed Development would not have an AEoI of any of the European sites and qualifying features considered in the RIAA [**REP2-018** and **REP2-019**]. These conclusions are reiterated in the RIAA Addendum [**REP4B-015**].
- 4.2.3 Several matters relating to the identification of AEoI of European sites were discussed during the Examination. These are detailed below. Table 4.1 then identifies those sites and features where the Applicant's conclusion of no AEoI is, at the time of writing, disputed by IPs. Where conclusions around AEoI have been disputed by IPs during the Examination, the Applicant's Stage 2 integrity matrices [**REP2-004**] have been updated for the relevant sites and features (see Annex 2 of this report).

Thanet Coast and Sandwich Bay SPA and Ramsar site/ site selection and alternatives

- 4.2.4 The application site (specifically, the proposed cable route) crosses part of the Thanet Coast and Sandwich Bay SPA and Ramsar site – as illustrated on Figure 9.3 of the RIAA [**REP2-018** and **REP2-019**].
- 4.2.5 The Applicant noted [**REP2-013**] that with the removal of Landfall Option 2 from the Proposed Development [**REP1-014**], there is no predicted permanent loss of saltmarsh habitat (which NE stated provided supporting habitat for qualifying features of the Thanet Coast and Sandwich Bay SPA and Ramsar site [**RR-053** and **REP1-113**]). As such, the Applicant did not consider it necessary to introduce a DCO/ DML condition (as suggested by NE in [**REP1-113**]) to avoid permanent loss of saltmarsh habitat.
- 4.2.6 Temporary habitat loss/ disturbance of saltmarsh and other intertidal habitats would still occur during construction and decommissioning of the Proposed Development, but taking account of proposed mitigation measures (including a Saltmarsh Mitigation, Reinstatement and Monitoring Plan (SMRMP)), the Applicant considered that this would not result in an AEoI of the Thanet Coast SPA and Ramsar site [paragraphs 11.2.19-11.2.32, **REP2-018** and **REP2-019**].
- 4.2.7 As recorded in the latest version of the Project Description, Site Selection and Alternatives and Saltmarsh SoCG between the Applicant and NE [Table 5, **REP5-075**], following the removal of Landfall Option 2 NE is now in agreement that the Proposed Development, both alone and in-combination, will not result in an AEoI of the Thanet Coast and Sandwich Bay SPA and Ramsar site. As explained in an earlier iteration of this SoCG [**REP3-043**], NE's agreement was subject to the SMRMP having been "*updated appropriately*" following NE's comments on Revision B (as provided at Deadline 3 in [**REP3-075**]) and being implemented successfully.

- 4.2.8 The Applicant provided a revised version of the SMRMP at Deadline 4 [Revision C, **REP4-020**] in effort to address NE's comments on Revision B. At Deadline 5, NE confirmed [**REP5-064**; **REP5-066** and **REP5-075**] that the SMRMP had been successfully updated following its comments in [**REP3-075**] and was now agreed with the Applicant. However, NE stated that HDD under the saltmarsh (Landfall Option 1) *"...still represents the best landfall option, as there is more certainty in the environmental outcome"* [**REP5-064**]. NE also reiterated that the saltmarsh provided an important role in supporting the bird species which are qualifying features of the Thanet Coast and Sandwich Bay SPA [**REP5-066**].
- 4.2.9 The RIAA Addendum [**REP4B-015**] stated that, as a result of the SEZ, there is no change in activities required, no change in mitigation proposed and no change in the assessment or to the conclusion of no AEoI of the Thanet Coast SPA and Ramsar site as presented in [**REP2-018** and **REP2-019**].
- 4.2.10 In its RR, the RSPB agreed that, in its view, *"the project will have no significant impact"* on the Thanet Coast and Sandwich Bay SPA and Ramsar site [**RR-057**].
- 4.2.11 Throughout the Examination (to date), KWT has maintained its objection to the proposed cable landfall being located at Pegwell Bay and has instead favoured alternative landfall locations [**RR-048**; **REP1-102** and **REP3-081**]. KWT made the case that Pegwell Bay should have been avoided altogether, due to *"...the numerous [ecological] designations and the cumulative disturbance caused by several other large-scale developments..."* [**REP3-041**]. KWT considered *"...it is not possible to state that the Proposed Development will not damage the integrity of the [Thanet Coast and Sandwich Bay SPA and Ramsar] site"* [**REP3-081**].

Thanet Coast SAC

- 4.2.12 The Applicant's conclusion (as presented in the RIAA [**REP2-018** and **REP2-019**]) that there would be no AEoI of the chalk reefs qualifying feature of the Thanet Coast SAC was a matter discussed during the Examination.

Habitat loss and disturbance

- 4.2.13 The RIAA submitted with the DCO application showed the Thanet Coast SAC as being crossed by the proposed Offshore Export Cable Corridor (OECC) [Figure 9.1, **APP-031**]. In its RR [section 2.2.2, **RR-053**], NE stated that it had outstanding concerns regarding impacts from the Proposed Development on the chalk reefs qualifying feature. NE considered that works within the SAC should be completely avoided [**RR-053**].
- 4.2.14 At Deadline 1, NE noted [**REP1-113**] the following commitments made by the Applicant:
- If any chalk reefs are identified during pre-construction surveys, then micro-siting would be utilised to avoid these areas;
 - There would be no cable protection (and therefore no loss of habitat) in the Thanet Coast SAC; and
 - There would be no cabling within the Thanet Coast SAC. This would be ensured through the introduction of the Cable Exclusion Zone for Ramsgate Harbour.

- 4.2.15 NE confirmed that these commitments removed many of its concerns regarding the potential effects on the Thanet Coast SAC and advised that the Applicant's commitments regarding cabling should be secured in the dDCO [**REP1-113**]. The Applicant's revised dDCO [revision A, **REP1-068**] included the Cable Exclusion Zone as a condition in the DML and the revised RIAA submitted at Deadline 2 illustrated that the area of overlap between the red line boundary and Thanet Coast SAC was now covered by the Cable Exclusion Zone [Figure 9.1, **REP2-018** and **REP2-019**].
- 4.2.16 At Deadline 3, NE noted [**REP3-075**] that the Cable Exclusion Zone had now been secured within the dDCO, thereby ensuring that the export cables would avoid the Thanet Coast SAC. As such, NE queried [**REP3-075**] the reference in the RIAA [**REP2-018** and **REP2-019**] to micro-siting in respect of chalk reefs of the Thanet Coast SAC.
- 4.2.17 In response, the Applicant agreed with NE – that no micro-siting would be required of the cable route within the Thanet Coast SAC, as no cable would be laid within the Thanet Coast SAC [**REP4-005**]. The Applicant clarified that whilst this reference to micro-siting remained following the edits for the revised RIAA at Deadline 2, it was no longer required in relation to conclusions of no AEoI of the Thanet Coast SAC [**REP4-005**].

Increased suspended sediment and deposition

- 4.2.18 In response to ExQ 1.1.35 [**PD-012**], regarding impacts to subtidal and benthic intertidal habitats, NE advised that an in-combination assessment should be undertaken with other known dredging and disposal activities to understand in greater detail the pressure on qualifying features from increased siltation/sedimentation [**REP1-116**]. KWT stated that impacts to subtidal and benthic habitats in-combination with dredging of an area of the Goodwin Sands for the Dover Harbour Port Development should be considered [ExQ 1.1.35, **REP1-103**].
- 4.2.19 In its own response to ExQ 1.1.35 [**REP1-024**], the Applicant pointed to Table 12.2 of the RIAA [**REP2-018** and **REP2-019**] for its consideration of potential in-combination effects to subtidal and benthic intertidal habitats. The Applicant stated [ExQ 1.1.35; **REP1-024**] that due to there being no/ low potential for a temporal overlap between the Proposed Development activities and those of other plans and projects, together with the temporary nature of effects, there was no potential for in-combination effects of this nature to occur. In [**REP2-005**], the Applicant further explained that the dredging at Goodwin Sands is scheduled to be completed by the end of 2019, meaning there would be no temporal overlap with the Proposed Development and no change to its conclusion of no AEoI in-combination.
- 4.2.20 At Deadline 3, NE stated [**REP3-074**] (in relation to effects on Thanet Coast SAC) that it required further clarification regarding the potential in-combination effects from dredging and disposal at Ramsgate Harbour; noting in [**REP3-042**] that it had provided information to the Applicant regarding some licensed dredging activities at Ramsgate Harbour for this purpose. Whilst NE acknowledged that the ES does consider the cumulative effect of plumes arising from the disposal site and the Proposed Development, concluding that the effect is small, it sought further clarity about that conclusion and how it related to European sites [**REP3-074**]. However, NE did not anticipate that this would materially affect the outcome of the relevant assessments [**REP3-074**].

- 4.2.21 At Deadline 4, the Applicant explained that Thanet Coast SAC remained under discussion with NE regarding in-combination effects with existing dredging at Ramsgate Harbour, but reiterated that these dredging activities would not interact temporally with the Proposed Development activities [page 44, **REP4-005**]. It is unclear how this statement fits with the Applicant's statement later in the document [page 57, **REP4-005**] and in Table 12 of the RIAA [**REP2-018** and **REP2-019**], that: "*The use of these [dredging/ disposal] sites is intermittent and the volumes used are unknown in advance and therefore it is not possible to determine if the use of the sites will overlap with impacts from the construction of Thanet Extension*".
- 4.2.22 In-combination effects with other dredging/ disposal activities was discussed further at ISH8 [**EV-045** and **EV-046**], specifically in relation to a judicial review which was being sought for the marine licence granted for Dover Harbour Board to dredge material from the south Goodwin Sands (as raised by the Applicant in item NE-124 [**REP1-017**]).
- 4.2.23 NE also sought clarity with regard to the assessment of impacts to Thanet Coast SAC from sand wave clearance and disposal, and whether it reflected the extent of potential working activities [**REP3-074**]. NE was concerned that the assessment was based upon activity occurring uniformly across the cable route, rather than being concentrated in discrete areas [**REP3-074**]. In effort to address NE's concerns in this regard, at Deadline 4 the Applicant submitted an updated version of application document [**APP-148**] - '*Sand Wave Clearance, Dredge and Disposal Site Characterisation*' [revision B, **REP4-019**]. The Applicant explained [**REP4-005**] that it had considered [in **REP4-019**] both a uniform and a discrete disposal option for material derived from sand wave clearance, based on the worst-case scenario being assessed. A further revision to this document was provided at Deadline 5 [**REP5-038**].
- 4.2.24 NE commented on [**REP4-019**] at section 5 of its Deadline 5 submission [**REP5-064**], stating that there are "*outstanding questions regarding the potential impacts of cable preparation works upon designated sites (Goodwin Sands pMCZ [proposed Marine Conservation Zone], Thanet Coast SAC and MCZ [Marine Conservation Zone]) and their associated features*".
- 4.2.25 At Deadline 5, the Applicant submitted a "*SAC and MCZ Clarification Note*" [**REP5-047**] relating to the Thanet Coast SAC in response to ISH8 action points 10 and 16 [**EV-045** and **EV-046**] (including a tabulated summary of implications for the Thanet Coast SAC). The ExA understands that the outstanding questions referred to by NE in section 5 of [**REP5-064**] are those to which the Applicant has responded in [**REP5-047**]. The Applicant remained of the view that there will be no AEoI of the Thanet Coast SAC (including potential effects from suspended sediment and deposition associated with the cable installation and wider cable design envelope including sand wave clearance and cable protection) [section 1.7, **REP5-047**].
- 4.2.26 At the time of publication of this RIES, NE has not formally responded to the Applicant's clarification note [**REP5-047**] or the Deadline 5 version of the sand wave characterisation report [**REP5-038**]. However, as a late submission for Deadline 5, an updated SoCG between the Applicant and NE records agreement of the no AEoI conclusion both alone and in-combination on the Thanet Coast SAC [page 22, **REP5-076**]. Cited as part of the agreement is reference to the information presented by the Applicant at Deadline 5 in response to the questions from NE [**REP5-047** and **REP5-038**].

Structures Exclusion Zone

- 4.2.27 In the RIAA Addendum [**REP4B-015**], the Applicant briefly considered the implications of the SEZ for the assessment of effects on Thanet Coast SAC. The RIAA Addendum stated that the SEZ does not change the activities/infrastructure required or the agreed mitigation; as such there would be no change to the Applicant's existing conclusion that there would be no AEoI of the Thanet Coast SAC (alone and in combination) [**REP4B-015**]. There have been no submissions to contradict this position and NE have indicated [**REP5-064**] that this section of the RIAA is unaffected by the introduction of the SEZ.

Southern North Sea SAC

- 4.2.28 As discussed in paragraph 2.1.5 of this RIES, the Southern North Sea cSAC became formally designated as a SAC during the course of the Examination. The revised RIAA and revised matrices prepared by the Applicant for Deadline 2 of the Examination refer to the Southern North Sea cSAC (in particular section 9.6 of [**REP2-018**] and matrices 9 and 28 of [**REP2-004**]).
- 4.2.29 The RIAA Addendum [**REP4B-015**] submitted at Deadline 4B refers to the Southern North Sea as a SAC. [**REP4B-015**] also states that, as a result of the SEZ, there is no change in activities required, no change in mitigation proposed and no change in the assessment or to the conclusion of no AEoI as presented in [**REP2-018** and **REP2-019**].
- 4.2.30 Based on the information available on JNCC's website⁷, the ExA understands that the final conservation objectives for the Southern North Sea SAC remain broadly consistent with the draft conservation objectives used to inform the Applicant's assessment.
- 4.2.31 Question 2.1.9 of the ExA's Second Written Questions (ExQ2) [**PD-016**] asked IPs to comment specifically on the implications (for the Examination) of the formal designation of the SAC. In response, NE stated that it did not consider there to be any material effects for the Examination resulting from the Southern North Sea SAC being formally designated [**REP5-065**]. Similarly, the Applicant stated that the formal designation did not affect the existing conclusions of the RIAA [**REP5-065**].
- 4.2.32 Subsequent references in this section are to the Southern North Sea SAC as is now formally designated.
- 4.2.33 The Applicant concluded a LSE on the harbour porpoise qualifying feature of the Southern North Sea SAC, on the basis of increases in underwater noise during construction and decommissioning of the Proposed Development (both alone and in combination with other plans and projects) as set out in Table 3.1 of this RIES, and summarised in Table 7.3 of the revised RIAA [**REP2-018**].
- 4.2.34 As part of the original RIAA [**APP-031**] and accompanying matrices [matrix 9, **APP-033**], the Applicant screened out LSE arising from "accidental pollution" during construction, operation and decommissioning of the Proposed Development on the basis of embedded mitigation in the form of pollution control plans being in place as part of the Proposed Development [Table 6.1, page 6-60 of **APP-031**].
- 4.2.35 The Applicant provided information to inform an appropriate assessment of the Southern North Sea SAC in sections 11.3 (project alone) and 12.3 (in-combination with other plans and projects) of [**REP2-018** and **REP2-019**]. The

Applicant concluded that there would be no AEoI on the Southern North Sea SAC alone or in-combination with other plans and projects.

- 4.2.36 The Applicant provided a Draft Marine Mammal Mitigation Protocol (MMMP) for piling activities as part of the application documents [**APP-146**] and Table 6.1 of the revised RIAA [**REP2-018** and **REP2-019**] sets out the mitigation measures included in the context of marine mammals (on which the Applicant relies to conclude no AEoI of the Southern North Sea SAC).
- 4.2.37 The no AEoI conclusion in relation to accidental pollution events during all stages of the Proposed Development is contingent on a PEMP being produced to cover the construction and O&M phases (and will incorporate plans to cover accidental spills and potential contaminant release). This is referred to in the following paragraphs of [**REP2-018** and **REP2-019**]:
- Construction and decommissioning (alone, paragraph 11.3.4; in-combination, paragraph 12.3.4); and
 - Operation and maintenance (alone, paragraph 11.3.105; in-combination paragraph 12.3.56).
- 4.2.38 The implementation of the PEMP is provided for in the dDCO as part of DML conditions 13 (generation assets) and 11 (export cable system) [**REP5-019**].
- 4.2.39 These conclusions have not been disputed by any IPs during the Examination.
- 4.2.40 The focus of the Examination has centred on a disagreement over the AEoI conclusions in relation to the Southern North Sea SAC, and in particular the increases in underwater noise during construction and decommissioning of the Proposed Development (both alone and in combination with other plans and projects).
- 4.2.41 In sections 4.6 (page 12) and 5.4 (page 27) of its RR [**RR-053**], NE raised concerns including:
- Exclusion of “Tier 2” projects from within the in-combination assessment;
 - Apparent exclusion of in-combination assessment of average oil and gas activities based on historic activity and the Marine Noise Registry (which was in NE’s view presented in 7.14.52-57 and Figures 7.26 and 7.27 of the ES [**APP-048**]);
 - The assumed effectiveness of “soft start” piling equipment techniques mitigation and the potential underestimation of the piling impacts in the Applicant’s modelling;
 - The Applicant’s assertion in Table 12.2 and paragraphs 12.3.15 and 12.3.19 of the original RIAA [**APP-031**] that there is no prospect of temporal overlap between piling activities of the Proposed Development and that of the East Anglia 1, Hornsea 3, or Norfolk Vanguard projects.
- 4.2.42 NE also expressed a view that an additional condition should be included as part of the generation assets DML (to require the production of a Site Integrity Plan (SIP)) and some adjustments made to the wording of the existing DML condition in relation to the Southern North Sea SAC and the potential for significant impacts on harbour porpoise [pages 15 and 16, **RR-053**].

- 4.2.43 KWT also expressed views in relation to mitigation measures and noise level monitoring in respect of harbour porpoise in its Written Representation (WR) [page 25, **REP1-102**].
- 4.2.44 The MMO stated in response to the ExQ1 (1.1.35 of [**REP1-107**]) that it "*defers to the advice of the Statutory Nature Conservation Bodies (SNCBs) for advice on HRA*", and therefore has not directly disputed the Applicant's conclusions of no AEoI during the Examination.
- 4.2.45 The Applicant responded to NE's points at [**REP1-017**] under items NE-31, NE-42, NE-49 NE-95, NE-105 and NE-106. The Applicant committed to undertake further discussions with NE, and to update the RIAA [**APP-031**] at Deadline 2 to revise the marine mammal in-combination assessment to include new project information (post June 2018) and include consideration of Tier 2 projects [Table 4.2, **REP2-018** and **REP2-019**]. The Applicant also responded to KWT's comments under KWT-30, KWT-77, KWT 78, KWT-108, KWT-112 and KWT-113 of [**REP2-013**].
- 4.2.46 In response to the ExQ1 [Q1.1.22, **REP1-116**], NE confirmed it was now content with the approach to the Applicant's assessment of 'soft start' piling. The SoCG between the Applicant and NE at Deadline 2 also captured the methodological agreement in this regard in Table 8 [**REP1-073**, superseded by **REP5-076**].
- 4.2.47 The ExA is aware that following the designation of the Southern North Sea cSAC/SCI²⁰ in January 2017, there is a statutory requirement for the Department for Business, Energy and Industrial Strategy (BEIS) and the MMO to undertake a review of certain projects that may be affected by the designation. This Review of Consents process was ongoing at the time of publication of this RIES; BEIS and the MMO published a draft HRA for consultation in November 2018²¹. Submissions from NE at Deadline 1 [Section 6.4.38, **REP1-113**] and [Q1.1.27, **REP1-116**], as well as the SoCG (Table 8, page 50 of [**REP1-073**]) provided NE's views around the ongoing '*Southern North Sea cSAC: Review of Consents*' being undertaken.
- 4.2.48 NE is of the view that some of the in-combination scenarios presented in the draft Review of Consents indicate that noise thresholds for the Southern North Sea SAC (as advised by the SNCBs) could be exceeded by wind farm projects constructing at the same time (and other noisy activities from other marine sectors). As such, NE considered that the Proposed Development "*may need to include mitigation to reduce the spatio-temporal disturbance footprint (e.g. through the use of noise mitigation systems or alternative foundations, by ensuring the location of simultaneous piling reduces the spatial extent within the cSAC, or by looking at concurrent piling in close proximity so the deterrence footprints overlap)*" [Q1.1.27, **REP1-116**].
- 4.2.49 However, NE remained concerned around the lack of clarity on how the SIP conditions would ensure that mitigation will be put in place to prevent

²⁰ Sites of Community Importance (SCI) are sites that have been adopted by the European Commission but not yet formally designated by the government of each country. The reference in this instance is to the Southern North Sea SCI and comes from NE's submission at Deadline 1 [**REP1-116**] which pre-dates the formal designation of the Southern North Sea SAC in February 2019 (see paragraph 2.1.5 of this RIES).

²¹ <https://www.gov.uk/government/consultations/southern-north-sea-review-of-consents-draft-habitats-regulations-assessment-hra>

exceedance of the SNCB thresholds for disturbance, advising that *"A process will need to be developed by the regulators to ensure continuing adherence to the SNCB thresholds as multiple SIPs are developed over time, especially when piling can take place over several years, and new projects can come online during this time. Should potential exceedance of the thresholds occur, a process for dealing with this issue needs to be in place – the affected developers / industries will need to work together with the regulator and SNCBs to prevent adverse effect on the SCI"* [Q1.1.27, **REP1-116**].

- 4.2.50 At Deadline 1, the Applicant welcomed the opportunity for further discussion with NE around this issue and the preparation of a SIP (NE-238 of [**REP1-017**]). At Deadline 2 a draft version of the Outline SIP was submitted to the Examination [**REP2-033**] (subsequently superseded by [**REP4-022**])²².
- 4.2.51 As part of action point 11 of ISH3 [**EV-019**], the ExA requested comments from the MMO and NE in particular on the draft Outline SIP to be provided for Deadline 3.
- 4.2.52 NE provided comments on the original draft of the Outline SIP in the Deadline 3 iteration of its SoCG with the Applicant [page 22, **REP3-042**], largely reiterating previous concerns around the SIP implementation. In [**REP3-075**], NE welcomed the inclusion of Tier 2 projects in the in-combination assessment, however stated that: *"Until the mechanism by which the SIPs will be managed, monitored and reviewed is developed, NE are unable to advise that this approach is sufficient to address the in-combination impacts and therefore the risk of Adverse Effect on Integrity on the Southern North Sea SCI cannot be fully ruled out"* [Table 3, **REP3-075**].
- 4.2.53 The MMO provided comments in section 2.3 of [**REP3-078**] and Table 9 of [**REP3-039**], in particular: *"...noting that the purpose of a SIP to ensure no risk to Adverse Effect on Integrity (AEoI), MMO seek clarity on how it will be demonstrated that the project will stay within the thresholds and conclusions in the HRA."*
- 4.2.54 The MMO also stated in its submission at Deadline 3 [paragraph 2.1.3, **REP3-078**] a need for revised DML wording around cessation of piling activities and notification where noise levels may be greater than previously predicted (in order to agree any potential additional monitoring or mitigation measures). Without such revisions, *"the MMO's power is limited to instructing on the need for additional monitoring only, with no remit to instruct cessation of piling whilst this is explored."* NE also stated similar concerns supporting amended wording to the DML (page 15 and 16 of [**RR-053**] and item 1.1.22 of [**REP2-045**]), stating that the amended wording *"is required to ensure that in the event that the assessment of the noise monitoring report demonstrates an impact more significant than that assessed in the ES is occurring, operations cease until appropriate increased mitigation and/or monitoring can be agreed and implemented"*.

²² [**REP2-033**] and [**REP4-022**] are referred to as *"Draft Site Integrity Plan"*. This document has since been included as a document to be certified within schedule 13 of the dDCO [**REP5-019**] (being the latest version at the time of publication of this RIES). All references in this RIES and accompanying matrices are made to the Applicant's Draft SIP as being the *"Outline SIP"* for the purposes of the dDCO.

- 4.2.55 The Applicant responded to the Deadline 3 submissions made by NE and the MMO at Deadline 4 [**REP4-005**] (pages 23-25 in response to the MMO, pages 45-48 in response to NE).
- 4.2.56 In respect of the Outline SIP, the Applicant maintained its position that developing a mechanism to “*manage, monitor and review the various SIPs anticipated to come forward*” is outside its jurisdiction, and that the RIAA [**REP2-018** and **REP2-019**], MMMP [**APP-146**] and Outline SIP [**REP4-022**] provide certainty that an AEoI will be avoided with respect to the SAC. The Applicant also stated that “*the mitigation is wholly within the ability of the Applicant to deliver (with no ambiguity as regards its success), with sign off required from MMO on the appropriateness of that mitigation through the SIP process*” [**REP4-005**].
- 4.2.57 In terms of the need for ‘additional mitigation’ cited by the MMO, the Applicant is of the view that there is sufficient certainty of the current provisions through a combination of the seasonal variability of harbour porpoise presence within the SAC and the location of the Proposed Development (in respect of the winter and summer extents of the species as shown in Figure 9.5 and described at paragraph 9.6.4 and 9.6.5 of [**REP2-018** and **REP2-019**]). The Applicant argued that these points combined indicated that any noisy works at the Proposed Development during the summer season (April to September inclusive) would not be relevant to features of the SAC identified through the HRA process (the Proposed Development being at least 229km from the summer extents of the Southern North Sea SAC and therefore beyond the maximum 26km screening distance) [**REP4-005**]. In the WR of KWT, concerns were expressed over the appropriateness of splitting the Southern North Sea SAC into summer and winter units [**REP1-102**], though this does not appear to be disputed or raised as an issue by any other IPs.
- 4.2.58 As such, the Applicant states that it is only works in the winter season (October to March inclusive) that have the potential to contribute to the thresholds, and maintains that “*the inclusion in the mitigation of a seasonal restriction means the mitigation is wholly within the ability of the Applicant to control, commit to and deliver*”, and that “*The actual need for such a seasonal restriction (if any) will be determined at the point the SIP is drafted, and may in practice result in a single winter season being excluded, or a single month, or a combination or no restriction. The mitigation does not require different construction techniques, different infrastructure or additional equipment on site, nor does it require liaison or discussion with other developers*” [**REP4-005**]. These commitments are outlined in paragraph 21-25 of the Outline SIP [**REP4-022**], including the Applicant maintaining a “watching brief” on the East Anglia THREE project’s construction “*in line with the timeframe identified in paragraph 13, Section 1*”²³.
- 4.2.59 At Deadline 5, the Applicant presented a table to summarise its evidence to support the conclusions of no AEoI with respect to the Southern North Sea SAC [Table 3, **REP5-016**]. The Applicant re-iterated its position that there was a “*DCO commitment to mitigation (the MMMP and the SIP) to ensure no AEoI on the harbour porpoise (with the DCO condition requiring final mitigation to be agreed by the MMO prior to relevant activities commencing)*” and that

²³ Reference to paragraph 13, section 1 appears to be erroneous, and the ExA understands that this reference should be to paragraph 14 of the SIP [**REP4-022**] which refers to a timescale as follows “*Winter season 2019/2020 onwards – should East Anglia THREE progress from Tier 2 into Tier 1*”,

"Mitigation measures proposed provide certainty that no AEoI would result (given that the extreme end of the mitigation, if required, would be a complete winter seasonal restriction, which would remove Thanet Extension from all HRA considerations for the SNS SAC for harbour porpoise)" [REP5-016].

- 4.2.60 In [REP5-064], NE commented on and welcomed the commitments made within the Outline SIP regarding the mitigation methods in section 4 of [REP4-022]. Subject to these commitments being secured in the DCO/ DML, this would allow NE *"to conclude no Adverse Effect on Integrity on the harbour porpoise feature of the Southern North Sea SAC"*.
- 4.2.61 The position reflected in the latest version of the Technical Topics SoCG between NE and the Applicant (a late submission for Deadline 5 [REP5-076]) reiterates NE's position at Deadline 3 (see paragraph 4.2.52 of this RIES), highlighting concerns with the conclusions of no AEoI in-combination. These concerns relate to uncertainties around the mechanism by which the SIPs will be managed. The SoCG appears not to have been updated on this particular topic area to reflect the position of NE in [REP5-064] around agreement of no AEoI of the SAC (as per the previous paragraph).
- 4.2.62 At Deadline 5A, in its comments on the Deadline 5 version of the dDCO [REP5-019], the MMO reiterated its position on the need for revised wording around cessation of piling activities [REP5A-003]. The MMO cited similar revisions being sought in relation to the Norfolk Vanguard and Hornsea 3 projects, with the amendment being justified *"In the interests of protecting the integrity of the Site of Community Interest."* The Applicant has previously expressed a view that no such revised wording is necessary as the MMO already has a statutory power enabling it to control piling in this way (i.e. enforce cessation of activity). The ExA remains unclear as to whether the MMO's statutory powers do already provide for this eventuality and hence this matter was raised as item 44 in [PD-017] with the Applicant, MMO and NE invited to respond by Deadline 6 to propose revised wording in the DML or (in the case of the Applicant), further justification that such provision is not necessary.
- 4.2.63 The ExA notes the stated agreement of no AEoI with NE does not appear to be contingent on the acceptance of NE's (and the MMO's) request for revised wording in the DML conditions around cessation of piling, but that this point remains *"under discussion"* in the Deadline 5 versions of the SoCG with the MMO [REP5-049] and NE [REP5-076].

Margate and Long Sands SAC

- 4.2.64 In its RR, NE stated that it had outstanding concerns regarding impacts to the sandbanks qualifying feature of the Margate and Long Sands SAC [section 2.2.2, RR-053].
- 4.2.65 In response to NE's RR, the Applicant explained that it understood NE's reference to Margate and Long Sand SAC [in RR-053] to be erroneous [NE-3 of REP1-027]. NE has agreed that the Proposed Development would not result in an AEoI on the Margate and Long Sands SAC, either alone or in-combination with other plans or projects [section 6.4.51, REP1-113].

Offshore ornithology

4.2.66 At Deadline 1, NE highlighted [**REP1-113**] data and methodological 'deficiencies' relating to the information that underpins the ornithological assessment within the ES and RIAA. This included:

- A statement that the methodology for assessing displacement of red throated diver does not follow agreed SNCB guidance; and
- Concerns around the parameters used in the collision risk modelling (CRM) predictions. NE considered that Band model option 1 outputs should be presented alongside Band model option 2 outputs, and the figures used in the cumulative displacement and cumulative CRM assessments.

4.2.67 Similar concerns were outlined by the RSPB in its RR [**RR-057**].

4.2.68 NE stated [**REP1-113**] that until these issues were addressed, it was unable to agree with the Applicant's conclusions of no AEoI for:

- Effects on red throated diver (as a qualifying feature of the Outer Thames Estuary SPA) in combination with other plans and projects; and
- Effects on kittiwake (as a qualifying feature of the Flamborough and Filey Coast SPA) in combination with other plans and projects.

Outer Thames Estuary SPA and assessment of displacement of red throated diver

4.2.69 The Applicant's approach to the assessment of displacement effects on red throated divers [as explained in **APP-031**] made assumptions based on construction monitoring surveys for Thanet Offshore Wind Farm, which found that that there was no displacement of red throated divers beyond the site boundary. This was questioned by the ExA in ExQ 1.1.11 [**PD-012**].

4.2.70 NE considered that the number of red throated divers predicted to be displaced by the Proposed Development may have been underestimated, due to the Applicant's methodology for assessing red throated divers not having followed agreed SNCB guidance (paragraph 5.3.1.1 of [**RR-053**] and section 6.4.3 of [**REP1-113**]). The RSPB raised similar concerns in its RR [**RR-057**]. At Deadline 1, NE provided a copy of the '*Joint SNCB Interim Displacement Advice Note: Advice on how to present assessment information on the extent and potential consequences of seabird displacement from Offshore Wind Farm (OWF) developments*' (January 2017) [**REP1-113**]. NE confirmed that this Advice Note is currently used by all SNCBs, including NE [Q1.1.11, **REP1-116**].

4.2.71 Furthermore, NE stated that since publication of this Advice Note, further evidence has emerged that red throated diver can be displaced beyond 4km from offshore wind farm developments (for example Webb *et al.* 2017), which NE considered further justified an approach that takes into account that divers may be displaced beyond 4km [Q1.1.11, **REP1-116**]. NE considered that there was no clear justification to change its current advice of assuming 100% displacement out to 4km and advised that this scenario is presented alongside the Applicant's preferred scenario [section 6.4.4, **REP1-113**].

- 4.2.72 The Applicant responded to the points raised in NE and the RSPB's RRs in [REP1-017], including at items NE-30, NE-79 to NE-83, NE-90 to NE-92, NE-296, NE-358 to NE-363, NE-366, RSPB-5, RSPB-6, RSPB-11, RSPB-13 and RSPB-14. The Applicant also provided the following documents in view of the ExA's, NE's and RSPB's concerns:
- *'Red throated diver cumulative (EIA) and in-combination (HRA) impact assessment methodology'* [REP1-023, Annex C]. This intended to provide more detail with respect to the methodology and data used in the Applicant's assessment.
 - *'Displacement of red throated divers for Thanet Extension project alone'* [REP1-023, Annex D]. This included additional 'displacement matrices' for red throated diver within the proposed array area and in a 4km buffer. Notwithstanding this, the Applicant considered that the buffers adopted in the application documentation are based on empirical regional and site-specific data, which it considered to be appropriate [REP2-013]. Furthermore, the Applicant stated that due to the low numbers of birds potentially displaced by the Proposed Development, a change in the displacement buffer would not materially change the outcome of the assessment [REP2-013].
- 4.2.73 Whilst NE disagreed with some aspects of the methodology used to assess displacement of red throated diver, NE acknowledged that if the recommended methodology were used, it is likely that the overall conclusions of the Applicant's assessment would remain the same [REP1-113 and REP4C-008].
- 4.2.74 NE has confirmed its agreement with the Applicant's conclusion that displacement of red throated diver from the Proposed Development alone is not likely to have an AEoI of the Outer Thames Estuary SPA [REP1-113; REP3-089; REP4C-008 and REP5-077]. Table 4 of [REP5-077] explains that NE's agreement is *"based on the fact that the project and 4km buffer is outside of the Outer Thames Estuary SPA boundary"*.
- 4.2.75 However, NE's WR [REP1-113] and the RSPB's RR [RR-057] stated that it was not possible to rule out an AEoI of the red throated diver population of the Outer Thames Estuary SPA from displacement effects in-combination with other offshore wind farms. NE maintained this position at Deadline 3 [REP3-089 and REP3-041].
- 4.2.76 At Deadline 4, the Applicant considered the consequences of the SEZ for the assessment of impacts (alone and in combination) to the red throated diver feature of the Outer Thames Estuary SPA [REP4-023]. Whilst the SEZ was developed as mitigation for shipping/ navigation, the Applicant considered that it also affords mitigation for features of the Outer Thames Estuary SPA [REP4B-015]. The Applicant concluded in [REP4-023] that the SEZ would eliminate any displacement effect on red throated diver and that the Proposed Development would make no contribution to an in-combination assessment of displacement on the red throated diver feature of the Outer Thames Estuary SPA [REP4-023].
- 4.2.77 The RIAA Addendum [REP4B-015] explained that the SEZ had increased the separation distance between the boundary of the Outer Thames Estuary SPA and the closest possible wind turbine (from 6.15km to 7.65km), which the

Applicant considered provided greater weight to the existing conclusion of no AEoI [REP4B-015]. Furthermore, the Applicant noted [REP4B-015] that the assessment in the RIAA [REP2-018 and REP2-019] is based on a separation distance of 4km, which it considered to be very precautionary in light of the 7.65km separation distance introduced by the SEZ. The RIAA Addendum [REP4B-015] concluded that the SEZ does not change the conclusions presented in the revised RIAA [REP2-018 and REP2-019]; that displacement of red throated diver would not result in an AEoI of the Outer Thames Estuary SPA, either alone or in-combination.

- 4.2.78 At Deadline 4C, an updated version of the Offshore Ornithology SoCG between the Applicant and NE was submitted [REP4C-008]. NE maintained its position that it was not possible to rule out an AEoI of the red throated diver population of the Outer Thames Estuary in combination with consented and operational offshore wind farm projects [REP4C-008]. However, NE did accept that the in-combination contribution from the Proposed Development was likely to be very small in the context of displacement impacts from other offshore wind farms [REP4C-008]. NE also stated: *"Following the introduction of the SEZ we acknowledge that there is now some uncertainty whether there would be any displacement effects, given the distance that the project is now planned to be from the SPA. However, it cannot be concluded that there will be no displacement effect at all"* [Table 3, REP4C-008]. NE's position on this matter remained unchanged in an updated version of the Offshore Ornithology SoCG, submitted at Deadline 5 [REP5-077].
- 4.2.79 At Deadline 5, the Applicant presented a table to summarise its evidence supporting the conclusions of no AEoI with respect to red throated diver in combination effects at the Outer Thames Estuary SPA [Table 2, REP5-016].
- 4.2.80 At paragraph 43 of [REP5-016], the Applicant emphasised its position that the SEZ places the Proposed Development array boundary *"at the extreme limit of the (very precautionary) Natural England 8km screening distance"* and that this 8km range is in their view *"overly precautionary for Thanet Extension, with site specific data indicating displacement falling to zero within 4km and displacement less than 100% even within the existing wind farm area"*.
- 4.2.81 NE responded to [REP4-023] at Deadline 5, in [REP5-064]. NE considered that the increased distance between the Proposed Development and the Outer Thames Estuary SPA (resulting from the SEZ), coupled with the presence of the existing Thanet offshore wind farm, which may already be exerting displacement effects within the SPA in this general area, strengthened the Applicant's argument that the additional influence of the Proposed Development on the in-combination displacement effect is likely to be very small [REP5-064]. Furthermore, NE acknowledged there is some uncertainty whether there is likely to be any contribution from the Proposed Development to in-combination displacement effects, now that the SEZ forms part of the application [REP5-064].
- 4.2.82 However, NE reiterated that due to the existing displacement effects from operational offshore wind farm projects, *"...it is not possible for Natural England to state that there is no adverse effect in-combination beyond reasonable scientific doubt"* [REP5-064]. In this context, NE highlighted the importance of the need for any post consent ornithological monitoring, should the Proposed Development be consented, to focus on the extent of red throated diver displacement in and around Outer Thames Estuary SPA [REP5-064].

4.2.83 As recorded in the latest version of the Offshore Ornithology SoCG between the Applicant and NE [**REP5-077**], in-combination effects on the integrity of the Outer Thames Estuary SPA with regards red throated diver remained under discussion.

Flamborough and Filey Coast SPA - assessment of collision risk for kittiwake and gannet

4.2.84 The Applicant's approach to CRM is presented in [**APP-080**], including the methods, data input and results. The Applicant explained that due to uncertainties in data collected and reported by the Offshore Renewables Joint Industry Programme (ORJIP), it considered the ORJIP data unsuitable for use in its CRM [**APP-045**]. As a result, CRM has been undertaken based on the Band (2012) 'option 2' model using generic bird flight height data [**APP-045**], for five seabird species – kittiwake, gannet, lesser black-backed gull, herring gull and great black-backed gull.

4.2.85 NE's RR [**RR-053**] stated that it had outstanding concerns regarding impacts to the kittiwake qualifying feature of the Flamborough and Filey Coast SPA.

4.2.86 NE expressed concerns that by using option 2 of the Band (2012) model (rather than option 1, which uses site specific flight height data) and nocturnal activity factors, the predicted mortalities may be underestimated [**REP1-113** and **REP1-116**]. NE considered [**REP1-113**] that collision risk modelling predictions using Band model option 1 should be presented alongside Band model option 2 outputs, and the figures used in the cumulative/ in-combination collision risk assessments.

4.2.87 Notwithstanding these concerns, NE has agreed that use of its recommended input parameters for CRM would make "*no material difference*" to the overall assessment conclusions [Table 4, **REP5-077**].

4.2.88 NE has agreed that collision mortality from the Proposed Development alone is not likely to have an AEoI of any species for the relevant European sites [Q1.1.9, **REP1-116**]. In particular, collision risk to the kittiwake (and to a lesser extent, gannet) populations of the Flamborough and Filey Coast SPA has been discussed during the Examination; [**REP4-033** and **REP5-077**] specifically confirm NE's agreement that the Proposed Development alone will not have an AEoI of the kittiwake and gannet populations of the Flamborough and Filey Coast SPA.

4.2.89 Regarding gannet, in its WR NE stated [**REP1-113**]: "*...although we have concerns that there is potentially an underestimate of collision mortality, we do not think it will change the overall conclusions that there is no significant effect either alone or in-combination*".

4.2.90 However, due to the methodological issues NE had identified with the CRM, at Deadline 1 [**REP1-113**] it was unable to agree with the Applicant's conclusion that there would be no AEoI of the kittiwake population of the Flamborough and Filey Coast SPA from collision mortality, in combination with other plans and projects. NE advised that consideration should be given to what proportion of kittiwake mortality can be apportioned to Flamborough and Filey Coast SPA. In NE's view, this was required in order to have a complete total for the purposes of informing an in-combination assessment [**REP1-113**].

4.2.91 The Applicant responded to these points through an additional submission at Deadline 1: '*Collision Risk Modelling Parameters and Thanet Extension's*

Contribution to Cumulative and In-Combination Totals' [REP1-023]. This was developed further at Deadline 3, when the Applicant submitted a '*Clarification Note on CRM Parameters and Thanet Extension's Contribution to Cumulative and In-Combination Totals'* [REP3-058]. The Applicant used what it described as "*NE's more precautionary CRM input parameters*" [as presented in Table 2, REP3-058] to produce alternative annual collision mortality rates for kittiwake and gannet [as presented in Table 3, REP3-058]. The Applicant then considered [REP3-058] what proportion of the wider populations of kittiwake and gannet could be attributed to the Flamborough and Filey Coast SPA populations.

- 4.2.92 The Applicant concluded [REP3-058] that these alternative collision risk mortality rates would not change the conclusions presented in the revised RIAA [REP2-018 and REP2-019]. The Applicant considered that mortality of gannet or kittiwake from the Proposed Development would not have "*any appreciable effect*" on the findings of in-combination effects with other plans and projects and therefore, "*...would not cause an adverse effect on integrity to arise as a result of this project being included as part of a in-combination assessments [sic] for kittiwake and gannet*" [REP3-058].
- 4.2.93 At Deadline 3, NE re-iterated that it was not possible to rule out an AEoI of the kittiwake population of the Flamborough and Filey Coast SPA in-combination [REP3-089].
- 4.2.94 At Deadline 4, NE commented [REP4-033] on the Applicant's Clarification Note [REP3-058], highlighting that whilst the RIAA [REP2-018 and REP2-019] assumes that the maximum annual mortality from kittiwake collisions is 14.74, the upper level presented in Table 3 of [REP3-058] is 23 collisions. NE also considered [REP4-033] that it was misleading to state that Table 3 [REP3-058] uses "*more precautionary*" NE parameters, as these are based on generic flight height distributions, rather than site specific flight heights. However, NE acknowledged that use of the upper range of mortality would not change the overall assessment conclusions, although advised that the higher figures are used for the assessment [REP4-033].
- 4.2.95 The Applicant submitted the document '*Offshore Ornithology In-combination Effects Position Paper on Kittiwake and the Flamborough and Filey Coast SPA*' [REP4-029] at Deadline 4. In [REP4-029], the Applicant provided further justification to support its conclusion that the Proposed Development would not result in an AEoI in-combination; including that all projects included within its in-combination assessment (in relation to kittiwake and Flamborough and Filey Coast SPA) and for which a project specific HRA had been undertaken by the Competent Authority, had formally concluded no AEoI alone and in-combination.
- 4.2.96 In [REP4-029], the Applicant also argued that the Blyth (NaREC Demonstration) and Beatrice Demonstrator offshore wind farms would shortly be decommissioned, thereby further reducing kittiwake collision mortality in-combination totals (and offsetting the contribution from the Proposed Development). This matter was considered further in the Applicant's Deadline 5 submissions (discussed further below, see also footnote ²⁴).
- 4.2.97 The Applicant concluded [REP4-029] that the predicted contribution to kittiwake collision mortality from the Proposed Development alone (stated to be between 0.60 and 1.63 birds per annum for Flamborough and Filey Coast SPA) would not make an appreciable contribution to the in-combination totals with other offshore wind farms.

- 4.2.98 In the RIAA Addendum [**REP4B-015**], the Applicant considered the implications of the SEZ for the assessment of collision risk. The RIAA Addendum [**REP4B-015**] stated that the SEZ does not change the number of wind turbines and that there would be no change to the Applicant's existing conclusion that there would be no AEoI of the Flamborough and Filey Coast SPA (alone and in combination). NE agreed with this conclusion in section 12 of its Deadline 5 submission [**REP5-064**].
- 4.2.99 At Deadline 4C, an updated version of the Offshore Ornithology SoCG with NE was submitted [**REP4C-008**]. NE maintained its position that it was not possible to rule out an AEoI of the kittiwake population of the Flamborough and Filey Coast SPA from collision mortality, in combination with other offshore wind farm projects [**REP4C-008**]. However, NE acknowledged that the contribution to kittiwake collision mortality from the Proposed Development *"...is likely to be small in the context of an in-combination total arising from a number of operational, consented or proposed projects, several of which are larger and/or closer to the SPA, including projects within the likely foraging range during the breeding season"* [**REP4C-008**]. NE's position on this matter remained unchanged in an updated version of the Offshore Ornithology SoCG, submitted at Deadline 5 [**REP5-077**].
- 4.2.100 At Deadline 5, the Applicant presented a table to summarise its evidence supporting the conclusions of no AEoI with respect to kittiwake collision risk in-combination effects at the Flamborough and Filey Coast SPA [Table 1, **REP5-016**].
- 4.2.101 The Applicant re-iterated [**REP5-016**] that its conclusion of no AEoI alone and in-combination primarily is based on *"A lack of an appreciable contribution to the in-combination collision risk totals for FFC SPA from Thanet Extension"* and further that *"the imminent decommissioning of Blyth and Beatrice Demonstrator contribute approximately 0.65 (i.e. a similar contribution to that predicted for Thanet Extension)"*²⁴. The Applicant [**REP5-016**] also argued there was inherent precaution in the modelling, based on 'as assessed' project parameters and not the *"frequently much reduced numbers 'as built'"* (with reference to a Crown Estate "headroom report" suggesting that current collision risk estimates for kittiwake are an overestimate²⁵).
- 4.2.102 The Applicant also referred [**REP5-016**] to a document submitted in relation to the Examination of the Norfolk Vanguard DCO application²⁶, which implies that even accounting for the most precautionary in-combination totals for kittiwake collision risk at the Flamborough and Filey Coast SPA (including the contribution of the Proposed Development), the evidence shows a slowing of the rate of population increase as opposed to a population decline. On this basis (i.e. an in-combination effect not compromising the ability of the population to continue to grow albeit at a reduced rate), the Applicant's position remained

²⁴ [Table 1, **REP5-016**] suggested that decommissioning work has commenced for Blyth in April 2019 and that decommissioning of Beatrice Demonstrator was approved by BEIS in January 2019 as part of a wider decommissioning of the oil platform (to which it supplies power).

²⁵ MacArthur Green (2017). Estimates of Ornithological Headroom in Offshore Wind Farm Collision Mortality. The Crown Estate, London.

²⁶ "Norfolk Vanguard Offshore Wind Farm Offshore Ornithology Assessment Update for Deadline 6" (10.D6.17) <https://infrastructure.planninginspectorate.gov.uk/document/EN010079-002764>

that the Proposed Development would have no AEoI on kittiwake from collision risk in-combination [**REP5-016**].

- 4.2.103 At Deadline 5, NE re-iterated that it agreed with the Applicant's conclusion of no AEoI on kittiwake from collision risk for the Proposed Development alone, but that "*...it is not possible to rule out an adverse effect on integrity when the project is considered in combination with other plans and projects. Although Thanet Extension is some distance beyond the likely foraging range of kittiwake from the SPA during the breeding season, there is the potential for the proposal to make a contribution to the overall collision mortality total*" [paragraph 8.4, **REP5-064**]. NE also repeated [**REP5-064** and **REP5-066**] its statements within [**REP4C-008**] regarding the contribution of the Proposed Development being "*small in the context of an in-combination total arising from a number of operational, consented or proposed projects*".
- 4.2.104 In [**REP5-066**], NE responded to the Applicant's argument (as presented in [**REP4-029** and **REP5-016**]) that the anticipated decommissioning of the Blyth (NaREC Demonstration) and Beatrice Demonstrator offshore wind farm would "offset" the contribution from the Proposed Development to in-combination collision mortality. NE considered [**REP5-066**] that "*...there appears to be some confusion regarding the two OWFs at Blyth in REP4-029*". NE stated that the wind turbines being decommissioned are two turbines generally known as Blyth Offshore Wind Farm - a different project to 'Blyth (NaREC Demonstration)' (as referenced in [**REP4-029**]) which is a permission for 15 turbines. Therefore, NE stated [**REP5-066**] that the predicted reduction in kittiwake collisions for Blyth (NaREC Demonstration) drawn from Table 1 of **REP4-029** will not actually arise for the foreseeable future. Consequently, NE suggested that the Applicant provided evidence to confirm what is being decommissioned and what contribution it would make to the in-combination totals [**REP5-066**]. The Applicant had not formally responded to NE's comments on this matter at the time of publication of this RIES.
- 4.2.105 In its response to the ExA's ISH8 action points [**REP5-066**], NE remained of the view that the worst case scenario 'as assessed' for the in-combination projects should continue to be considered until such time as the any remaining capacity (headroom) between the consent and the 'as built' project is 'withdrawn' (ie formalisation of 'as built' collision risk calculations are undertaken for the projects in question). NE also disagreed that there is new evidence to suggest assessments are over precautionary, given the "*considerable uncertainty around the current estimates of the in-combination totals*" and "*lack of agreed figures and a common method to arrive at them inevitably [leading] to confusion*" [**REP5-066**].
- 4.2.106 As reported above, in [**REP1-113**] NE expressed concerns around impacts to the gannet population of the Flamborough and Filey Coast SPA, but the subsequent focus of NE's submissions to the Examination has been in respect of impacts to the kittiwake population. Consequently, the ExA asked as an action point at ISH8 [**EV-047**] for an updated version of the Offshore Ornithology SoCG between NE and the Applicant [**REP4C-008**] to specifically reflect the level of agreement for in-combination collision risk AEoI conclusions for gannet. An updated version of the SoCG was submitted at Deadline 5 [**REP5-077**], which explained that NE was investigating the implications of in-combination collision mortality with the proposed Norfolk Vanguard offshore wind farm (for gannet). NE intended to provide a view on AEoI of the gannet population of the

Flamborough and Filey Coast SPA from collision mortality in-combination at
Deadline 6 [**REP5-077**].

- 4.2.107 As recorded in the latest version of the Offshore Ornithology SoCG between
the Applicant and NE [**REP5-077**], in-combination effects on the integrity of the
Flamborough and Filey Coast SPA with regards collision mortality of gannet and
kittiwake remained under discussion.

Table 4.1: The Applicant's shadow appropriate assessment and degree of agreement with Interested Parties

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
Thanet Coast SAC			
Chalk reefs	No (Section 11.2 [REP2-018 and REP2-019]. Table 1, REP4B-015]. Matrix 24, [REP2-004]).	Agreed with NE. Latest version of Technical Topics SoCG with NE [REP5-076] recorded that the Applicant's conclusion that there would be no AEoI of the Thanet Coast SAC (either alone or in-combination) has been agreed with NE - following additional material presented by the Applicant at Deadline 5 [REP5-038] and [REP5-047] in response to ISH8 action points 10 and 16 [EV-045 and EV-046].	See Stage 2 matrix 1 (Annex 2 of RIES).
Submerged or partially submerged sea caves	No (Section 11.2 [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 24, [REP2-004]).	Agreed with NE in its response to ExQ 1.1.6 [REP1-116]).	See Stage 2 matrix 1 (Annex 2 of RIES).
Margate and Long Sands SAC			
Sand banks which are slightly covered by sea water all the time	No (Section 11.2 [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 25, [REP2-004]).	Agreed with NE (initially disputed by NE [section 2.2.2, RR-053], but later agreed in [section 6.4.51, REP1-113]).	No update to Applicant's Stage 2 matrix 25 for this site [REP2-004].

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
Thanet Coast and Sandwich Bay SPA			
Ruddy turnstone (Non-breeding)	No (Sections 11.2, 11.5, 12.2 and 12.5, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 26, [REP2-004]).	Agreed with NE (initially disputed by NE in [Section 2.2.1, RR-053], but subsequently agreed [Table 5, REP5-075].	See Stage 2 matrix 2 (Annex 2 of RIES).
European golden plover (Non-breeding)		Agreed with RSPB in [RR-057]. Not agreed with KWT [REP3-081].	
Thanet Coast and Sandwich Bay Ramsar site			
Criterion 2: Wetland invertebrate assemblage	No (Sections 11.2, 11.5, 12.2 and 12.5, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 27, [REP2-004]).	Agreed with NE (initially disputed by NE [Section 2.2.3, RR-053], but subsequently agreed [Table 5, REP5-075].	See Stage 2 matrix 3 (Annex 2 of RIES).
Criterion 6: Ruddy turnstone (non-breeding)		Agreed with RSPB in [RR-057]. Not agreed with KWT [REP3-081].	
Southern North Sea SAC			
Harbour porpoise	No (Sections 11.3 and 12.3, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 28, [REP2-004]).	Inferred agreement of no AEoI for the project alone by NE (Deadline 3 response and SoCG refers to dispute around in-combination effects only [REP3-075 and REP3-042]). Conclusions around in-combination effects and manage/ review of the SIP process [REP4-022] still	See Stage 2 matrix 4 (Annex 2 of RIES).

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
		<p>not agreed and remain under discussion between the NE and the Applicant [REP5-076].</p> <p>However, in [REP5-064], NE appear to be satisfied that, subject to Outline SIP mitigation commitments being secured in the DCO/ DML, no AEoI could be concluded.</p> <p>MMO [REP1-107] "defers to the advice of the Statutory Nature Conservation Bodies (SNCBs) for advice on HRA", and therefore does not directly dispute the Applicant's conclusions of AEoI alone or in combination.</p>	
Outer Thames Estuary SPA			
Red throated diver	No (Sections 11.4 and 12.4, [REP2-018 and REP2-019]. Table 1 and Section 2.2, [REP4B-015]. Matrix 32, [REP2-004]).	<p>Agreed with NE for the Proposed Development alone [REP1-113, REP3-089 and REP5-077].</p> <p>Not agreed in-combination. NE [REP1-113; REP3-089 and REP5-077] and the RSPB [RR-057] consider that it is not possible to rule out an AEoI of the red throated diver population of the Outer Thames Estuary SPA from displacement effects in-combination with other offshore wind farms.</p>	See Stage 2 matrix 5 (Annex 2 of RIES).
Common tern Little tern	No (Section 11.4 [REP2-018 and REP2-019]. Table 1, [REP4B-015].	No specific objections raised by NE or other IPs.	

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
	Matrix 32, [REP2-004]).		
Flamborough and Filey Coast SPA			
Kittiwake	No (Sections 11.4 and 12.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 36, [REP2-004]).	Agreed with NE for the Proposed Development alone [REP4-033; REP5-066 and REP5-077]. Not agreed in-combination. NE considers that it is not possible to rule out an AEoI of the kittiwake population of the Flamborough and Filey Coast SPA from collision mortality, in combination with other offshore wind farm projects [REP1-113; REP3-089, REP4C-008, REP5-066 and REP5-077].	See Stage 2 matrix 6 (Annex 2 of RIES).
Gannet		Agreed with NE for the Proposed Development alone [REP4-033 and REP5-077]. Under discussion in-combination. Deadline 5 SoCG with NE [REP5-077] explains that NE is investigating the implications of in-combination totals with the proposed Norfolk Vanguard offshore wind farm. NE intends to provide a view on AEoI of the gannet population of the Flamborough and Filey Coast SPA from collision mortality in-combination at Deadline 6 [REP5-077].	
Guillemot Razorbill	No (Section 11.4 [REP2-018 and REP2-019]). Table 1, [REP4B-015]. Matrix 36, [REP2-004]).	No specific objections raised by NE or other IPs.	

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
Northumberland Marine SPA			
Guillemot	No (Section 11.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 37, [REP2-004]).	Agreed with NE in [REP5-077].	See also footnote 16 of the RIES regarding in-combination effects. No update to Applicant's Stage 2 matrix 37 for this site [REP2-004].
Farne Islands SPA			
Guillemot	No (Section 11.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 38, [REP2-004]).	Agreed with NE in [REP5-077].	See also footnote 16 of the RIES regarding in-combination effects. No update to Applicant's Stage 2 matrix 38 for this site [REP2-004].
St. Abb's Head to Fast Castle SPA			
Kittiwake	No (Sections 11.4 and 12.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 39, [REP2-004]).	[REP5-077] confirmed this is agreed with NE; noting that discussions are underway with Scottish Natural Heritage as this is a Scottish SPA. [REP5-030] confirmed that no consultation response has been received from Scottish Natural Heritage to date.	See also footnote 16 of the RIES regarding in-combination effects. No update to Applicant's Stage 2 matrix 39 for this site [REP2-004].

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
Guillemot Razorbill	No (Section 11.4 [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 39, [REP2-004]).		
Foulness (Mid-Essex Coast Phase 5) SPA			
Sandwich tern	No (Section 11.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 33, [REP2-004]).	Agreed with NE in [REP5-077].	No update to Applicant's Stage 2 matrix 33 for this site [REP2-004].
Alde-Ore Estuary SPA			
Lesser black-backed gull	No (Sections 11.4 and 12.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015]. Matrix 34, [REP2-004]).	Agreed with NE in [REP5-077].	No update to Applicant's Stage 2 matrix 34 for this site [REP2-004].
Alde-Ore Estuary Ramsar site			
Criterion 6: Lesser black-backed gull	No (Sections 11.4 and 12.4, [REP2-018 and REP2-019]. Table 1, [REP4B-015].	Agreed with NE in [REP5-077].	No update to Applicant's Stage 2 matrix 35 for this site [REP2-004].

Features	Potential Adverse Effect on Integrity?*	Agreed with SCNB and other relevant parties?	Comments
	Matrix 35, [REP2-004]).		

*Based on Applicant's RIAA [REP2-018 and REP2-019], RIAA Addendum [REP4B-015] and integrity matrices [REP2-004]. Additional supporting evidence from the Applicant, as appropriate, is cited in Section 4 and Annex 2 of this RIES.

5 ASSESSMENT OF ALTERNATIVES, CONSIDERATION OF IROPI AND COMPENSATORY MEASURES

- 5.0.1 At ISH8 [**EV-048** – **EV-052**], the ExA raised with both the Applicant and IPs (particularly NE) whether there may be a need for the Secretary of State (as the competent authority) to consider the application of alternatives and imperative reasons of overriding public interest (IROPI) under the HRA process.
- 5.0.2 As part of the ExA's action points from ISH8 [**EV-045**], the Applicant and NE were specifically invited to comment (by Deadline 5) on what alternative solutions and compensatory measures have been considered and the extent to which it may be necessary for the Secretary of State to consider alternative solutions and IROPI. These comments were invited in respect of:
- Displacement of red throated diver at the Outer Thames Estuary SPA (in-combination) (action point 1b of [**EV-045**]);
 - Collision mortality of kittiwake at the Flamborough and Filey Coast SPA (in-combination) (action point 3d of [**EV-045**])²⁷; and
 - Construction noise effects on harbour porpoise at the Southern North Sea SAC (in-combination) (action point 9b of [**EV-045**]).
- 5.0.3 The Applicant provided its response at Deadline 5, particularly Tables 1-3 of [**REP5-016**] which summarise the Applicant's no AEoI position and supporting evidence in relation to the European sites and features listed above. The Applicant's position remains that it has concluded no AEoI alone and in-combination with other plans and projects for all features screened in for potential LSE as part of its assessment.
- 5.0.4 Further the Applicant is of the view that "*In the absence of a negative conclusion on Article 6(3) [Appropriate Assessment], then Article 6(4) [alternatives, consideration of IROPI and compensatory measures] cannot be triggered*" noting that the Secretary of State has not yet undertaken any appropriate assessment in relation to the Proposed Development, and that this is undertaken post-DCO examination. Despite this, the Applicant provides information in sections 5, 6 and 7 of [**REP5-016**] respectively as follows:
- An 'outline case' for IROPI;
 - An 'outline case' for alternatives; and
 - Compensatory measures.
- 5.0.5 NE also responded to the ExA's action points at Deadline 5 [**REP5-066**], providing general advice around the approach to the post-appropriate assessment stages of the HRA process. NE also set out (as has the Applicant) that "*Although it is acceptable to discuss compensatory measures in principle*

²⁷ As discussed at paragraph 4.2.106 of this RIES, the ExA understands that discussions between the Applicant and NE are also ongoing around the conclusions of AEoI of the gannet population of the Flamborough and Filey Coast SPA from collision mortality in-combination. NE intends to provide a view on AEoI in this regard at Deadline 6 [**REP5-077**].

and without prejudice prior to an Appropriate Assessment (AA) or Habitats Regulations Assessment (HRA), it is important to recognise that compensatory measures can only be formally considered after a negative assessment under regulation 63 and where in the absence of alternatives and the presence of IROPI (regulation 64), the competent authority is minded to approve the plan or project".

- 5.0.6 No comments have been received from NE or other IPs on the Applicant's [REP5-016] submission at the time of publication of this RIES. Any such comments are due to be received at Deadline 6 of the Examination.

**ANNEX 1 EUROPEAN SITES AND
QUALIFYING FEATURES
IDENTIFIED BY THE APPLICANT
FOR CONSIDERATION IN THE
SCREENING ASSESSMENT**

Report on the Implications for European Sites for
Thanet Extension Offshore Wind Farm

Name of European Site	Qualifying features
Thanet Coast SAC	Chalk reefs Submerged or partially submerged sea caves
Sandwich Bay SAC	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") Fixed coastal dunes with herbaceous vegetation ("grey dunes") Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>) Humid dune slacks
Margate and Long Sands SAC	Sand banks which are slightly covered with seawater all the time
Thanet Coast and Sandwich Bay SPA	European golden plover Ruddy turnstone Little tern
Thanet Coast and Sandwich Bay Ramsar	Ramsar criterion 2: supports 15 British Red Data Book wetland invertebrates Ramsar criterion 6 – species with peak counts in winter: ruddy turnstone
Stodmarsh SPA	Great bittern Hen harrier Gadwall Northern shoveler Waterbird assemblage Breeding bird assemblage
Stodmarsh Ramsar	Ramsar criterion 2: Six British Red Data Book wetland invertebrates Two nationally rare plants Five nationally scarce species Wetland bird assemblage Gadwall Great bittern Northern shoveler Hen harrier
Stodmarsh SAC	Desmoulin's whorl snail
Southern North Sea SAC	Harbour porpoise
Outer Thames Estuary SPA	Red throated diver Common tern Little tern

Report on the Implications for European Sites for
Thanet Extension Offshore Wind Farm

Name of European Site	Qualifying features
Foulness (Mid-Essex Coast Phase 5) SPA	Avocet Bar-tailed godwit Common tern Dark-bellied brent goose Grey plover Hen harrier Knot Little tern Oystercatcher Redshank Ringed plover Sandwich tern Waterbird assemblage
Alde-Ore Estuary SPA	Avocet Lesser black-backed gull Little tern Marsh harrier Redshank Ruff Sandwich tern
Alde-Ore Estuary Ramsar	Ramsar criterion 2: Avocet Lesser black-backed gull Redshank Breeding wetland bird assemblage Wintering wetland bird assemblage
Flamborough and Filey Coast SPA	Gannet Guillemot Kittiwake Razorbill Breeding seabird assemblage
Northumberland Marine SPA	Arctic tern Common tern Guillemot Little tern Puffin Roseate tern Sandwich tern Breeding seabird assemblage

Report on the Implications for European Sites for
Thanet Extension Offshore Wind Farm

Name of European Site	Qualifying features
Farne Islands SPA	Arctic tern Common tern Guillemot Sandwich tern Breeding seabird assemblage
St Abb's Head to Fast Castle SPA	Guillemot Herring gull Kittiwake Razorbill Shag Breeding seabird assemblage

ANNEX 2 STAGE 2 MATRICES: ADVERSE EFFECT ON INTEGRITY (AEOI)

Stage 2 Matrices: Adverse Effect on Integrity

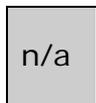
This annex of the RIES identifies the European sites and features for which the Applicant's conclusions with regards to AEoI were disputed by Interested Parties (IPs). Therefore revised integrity matrices have been produced by the Planning Inspectorate.

Key to Matrices:

- ✓ Likely significant effect cannot be excluded
- × Likely significant effect can be excluded
- C construction
- O operation and maintenance
- D decommissioning

Information supporting the conclusions is detailed in footnotes for each table with reference to relevant supporting documentation.

Where an impact is not considered relevant for a feature of a European site the cell in the matrix is formatted as follows:



Matrices Presented in this Annex:

Stage 2 Matrix 1: Thanet Coast SAC	A-3
Stage 2 Matrix 2: Thanet Coast and Sandwich Bay SPA	A-9
Stage 2 Matrix 3: Thanet Coast and Sandwich Bay Ramsar site.....	A-14
Stage 2 Matrix 4: Southern North Sea SAC	A-20
Stage 2 Matrix 5: Outer Thames Estuary SPA.....	A-26
Stage 2 Matrix 6: Flamborough and Filey Coast SPA.....	A-32

Stage 2 Matrix 1: Thanet Coast SAC

Site Code: UK0013107

Distance to array area: 7.28km accounting for SEZ [REP4B-015]

Distance to cable route: 0km (intersects with the European site boundary, although within Cable Exclusion Zone)

European site features	Effects on integrity					
	Temporary habitat loss & disturbance	Temporary habitat disturbance	Increased suspended sediment & deposition	Accidental pollution	Physical processes	In-combination effects
	C,D	O	C,O,D	C,O,D	O	C,O,D
Chalk reefs	X a,i	X b,i	X c,d,i	X e	X d,g,i	X h,i
Submerged or partially submerged sea caves	N/a	N/a	N/a	X e,f	N/a	X h,i

Notes

- a. The Cable Exclusion Zone [Figure 11.6, REP2-019] ensures that the construction (and subsequent decommissioning) of the Proposed Development will only result in disturbance to the Thanet Coast SAC as a result of anchoring etc and not direct cable installation [paragraph 11.2.15, REP2-019]. No chalk reef feature has been identified during site specific surveys undertaken by the Applicant (paragraph 11.2.16 of [REP2-019]; extent of surveys shown in Figure 4.1 of [REP4-025]).

The Applicant is of the view that there will be no direct temporary loss or disturbance of the chalk reef qualifying feature during construction or decommissioning and therefore no AEoI of the site (project alone) [paragraph 11.2.18, REP2-019].

NE noted [REP3-075] that the Cable Exclusion Zone had now been secured within the dDCO and the cable route now fully avoids all chalk reef features of the SAC (schedule 12 of the dDCO (condition 21 of the Export Cable System DML) [REP5-019]). The Applicant agreed that the need for micro-siting will not be required for the cable route within the Thanet Coast SAC, as no cable

will be laid within the SAC [REP4-005]. NE has also agreed that "*There are no further mitigation measures beyond those outlined in the RIAA are necessitated as a result of the assessment conclusions for the Thanet Extension project alone*" (in relation to the cable exclusion zone around the Thanet Coast SAC) [REP3-042], [REP5-076]. The agreement of no AEoI of the Thanet Coast SAC (alone) is also recorded in [REP5-076].

- b. As per footnote a. A short section of the offshore export cable corridor (OECC) falls partially within the SAC, resulting in potential for operational disturbance by anchor handling etc but not direct impacts to chalk reef during cable maintenance.

The Applicant explains that the combination of the absence of the reef feature during site specific surveys, combined with other project level mitigation, results in a conclusion of no direct permanent loss or temporary disturbance to that feature during the operation and maintenance phase and therefore no AEoI (project alone) (11.2.69 of [REP2-018 and REP2-019]).

These conclusions for the Proposed Development alone have not been disputed by NE. NE has also agreed that "*There are no further mitigation measures beyond those outlined in the RIAA are necessitated as a result of the assessment conclusions for the Thanet Extension project alone*" [REP3-042 and REP5-076]. The agreement of no AEoI of the Thanet Coast SAC (alone) is also recorded in [REP5-076].

- c. The Applicant explained that the magnitude of a change in total suspended sediment would be low (during construction), with potential receptors assessed as "*medium*" sensitivity. The conclusion was found to be "*minor adverse*" and not significant (paragraphs 11.2.42 – 11.2.44 of [REP2-018 and REP2-019]). The Applicant acknowledges there is potential for such sediment to reach the designated reef feature. Literature produced specifically for the SAC¹ found that the reefs have a low sensitivity to physical damage through siltation. The Applicant concludes the site's conservation objectives will be maintained in the long-term and there is no AEoI to the chalk reef feature of the Thanet Coast SAC in relation to temporary and short-term increased suspended sediment and associated deposition.

The Applicant considers that the magnitude of impact during construction is greater than any during operation and maintenance and so the conclusions remain valid for operational effects.

¹ <http://publications.naturalengland.org.uk/file/3229392>. Footnote 78 of [REP2-018 and REP2-019] "*The communities found on the reefs around Thanet are however, naturally tolerant of a degree of siltation due to the relatively high sediment load in the water column. Because of this, the reefs of the Thanet coastline are considered to be of a low sensitivity to physical damage through siltation.*"

NE stated that further consideration needed to be given to impacts, sensitivity and recoverability of habitats to deposition of material from sand wave clearance/ disposal including the habitat and size of area affected, and how disposal areas would avoid protected sites and areas of habitats of conservation interest [REP3-075]. NE was also unclear how the Applicant undertook the assessment (whether it is based on an even distribution of disposal occurring across the cable corridor and potentially underestimating disposal at discrete locations having a larger, more focused impact) [REP3-075].

The Applicant set out in Table 14.1 of [REP4-019] that the scenario assessed is based on a worst case in terms of potential requirements for sand wave clearance, and assumptions allow for either broadscale uniform distribution across a wider area, or discrete disposal across smaller areas (paragraphs 14.7.9, 14.7.11, 14.7.28 and 14.7.29 of [REP4-019]). A further revision to this '*Sand Wave Clearance, Dredging and Drill Arising: Disposal Site Characterisation*' document was provided at Deadline 5 [REP5-038].

At Deadline 5, the Applicant also submitted a '*SAC and MCZ Clarification Note*' [REP5-047] relating to the Thanet Coast SAC in response to ISH8 action points 10 and 16 [EV-045 and EV-046]. The document prepared by the Applicant was also in response to specific outstanding questions they received from NE on 12 April 2019 (around suspended sediment and deposition associated with cable laying activities and sand wave clearance) and included a tabulated summary of implications for the Thanet Coast SAC. The Applicant remains of the view that there will be no AEoI of the Thanet Coast SAC (including potential effects from suspended sediment and deposition associated with the cable installation and wider cable design envelope including sand wave clearance and cable protection) [section 1.7, REP5-047].

NE reiterated at Deadline 5 that it sought further clarification from the Applicant on a number of matters/ outstanding questions in relation to impacts on the SAC [section 5, REP5-064]. The ExA understands that these questions are those to which the Applicant has responded in their SAC and MCZ Clarification Note [REP5-047] as cited in the paragraph above. At the time of publication of this RIES, NE has not responded to this clarification note, which may be forthcoming at Deadline 6. However, NE's views on the Deadline 5 documents were captured in a late submission for Deadline 5 in the form of an updated SoCG [REP5-076] (see footnote i).

- d. NE and MMO had expressed concerns around the transcription of the project description parameters into the DCO application in their relevant representations (RRs) [RR-049 and RR-053]. This included potential disparities around the maximum parameters affecting the assessment of effects on benthic habitat in the ES and RIAA. The Applicant provided a '*Project Description Transcription into the Application*' clarification note [REP1-023 and REP3-003] and '*Offshore Project Description Clarification*

Note [REP1-023, REP3-053, REP4C-006 and REP5-046]. NE responded to these documents at Deadlines 3 and 4 [REP3-075 and REP4-033], although no specific concerns regarding the conclusions of AEoI of the Thanet Coast SAC were raised.

- e. The Applicant is of the view that the production, agreement and implementation of relevant plans with the MMO and NE will address any concerns around accidental pollution during construction, operation and decommissioning. These measures are summarised in Table 5.11 of [APP-046] and paragraphs 11.2.60 – 11.2.61 of [REP2-018 and REP2-019]. Following implementation of the relevant plans, the Applicant considers there is sufficient certainty that the risk of accidental pollution at all stages of the project is negligible and there will therefore be no AEoI (alone and in-combination with other plans and projects).

No concerns have been raised by IPs around the conclusions of AEoI from accidental pollution in this respect (see also footnote i).

- f. Control measures and mitigation are proposed to avoid accidental pollution events at all stages of the Proposed Development. The revised RIAA considered the potential for AEoI of the sea caves feature to ensure compliance with Sweetman II [REP2-018 and REP2-019] and with adherence to these measures, concluded no AEoI. NE has agreed in its response to ExQ 1.1.6 [REP1-116] that there will be no LSE on the sea caves qualifying feature. By extension, it appears that the proposed measures would also be adequate to exclude AEoI.
- g. The presence of foundations, scour protection and cable protection material during operation of the Proposed Development may introduce changes to the local hydrodynamic and wave regime, resulting in potential changes to benthic ecology and habitat suitability for some species.

The ES determined that the potential for impacts on physical processes will be negligible to minor, with any such impacts being localised and of short to medium term duration [APP-043]. Such changes would be localised and have a negligible risk for intertidal and subtidal habitats, including the chalk reef feature of the SAC. Therefore, the Applicant concludes no AEoI (paragraphs 11.2.103 – 11.2.105 of [REP2-018 and REP2-019]).

These conclusions for the Proposed Development alone have not been disputed by NE (see also footnote i)

- h. The Applicant was of the view that no plans or projects need to be screened in to an in-combination assessment for subtidal and benthic intertidal habitats as there is *"no temporal overlap or the chances of any temporal overlap between those plans and projects identified in Table 12.2 [of the RIAA]"* (paragraph 12.2.1 of [REP2-018 and REP2-019]). Therefore, no AEoI in-combination on all features of the Thanet Coast SAC is predicted.

NE stated [**REP3-074**] that it required further clarification regarding the potential in-combination effects from dredging and disposal at Ramsgate Harbour; noting in [**REP3-042**] that it had provided information to the Applicant regarding some licenced dredging activities at Ramsgate Harbour for this purpose [**REP3-074**]. However, NE did not anticipate that any clarification by the Applicant "*would materially affect the outcome of the relevant assessments*" [**REP3-074**].

The Applicant reiterated that these dredging activities at Ramsgate Harbour would not interact temporally with the Proposed Development activities [page 44, **REP4-005**]. However, it is unclear how this assertion fits with the Applicant's statement later statement [page 57, **REP4-005**] and in Table 12 of the RIAA [**REP2-018** and **REP2-019**], that: "*The use of these [dredging/ disposal] sites is intermittent and the volumes used are unknown in advance and therefore it is not possible to determine if the use of the sites will overlap with impacts from the construction of Thanet Extension*".

KWT and NE also raised the issue of an in-combination effects assessment of the Dover Harbour Board's consent from the MMO to dredge part of the Goodwin Sands pMCZ [**RR-048** and **RR-053**]. The Applicant understood that works in connection with the Dover Harbour Board's consent were anticipated to be undertaken between September 2019 and 2020 (with offshore works in connection with the Proposed Development anticipated to be undertaken between Q1 2021 and Q2 2023) and as such there is no potential for temporal overlap of activities (Q1.1.46 [**REP1-024**]). The ExA understands that this consent is now the subject of a judicial review (NE-124 of [**REP1-017**]) and therefore there is some uncertainty about the previously presented timescales.

As discussed in footnote **c** above, at Deadline 5 the Applicant submitted a "*SAC and MCZ Clarification Note*" [**REP5-047**]. Sections 1.6 and 1.7 of that Clarification Note refer to the in-combination effects of the Dover Harbour Board consent and the Proposed Development on Thanet Coast SAC. The figures quoted on the combined effect of disturbance (by area) are made in relation to the Goodwin Sands pMCZ and not the Thanet Coast SAC (disturbance would cover 5km² or 1.89% of the 265.92km² Goodwin Sands and gravels feature, of which 1.13km² (0.4%) is attributable to the Proposed Development). As per footnote **a** above, the Cable Exclusion Zone excludes all direct impacts on the SAC, so the ExA understands that these figures are not directly relevant to the consideration of AEoI in-combination at the Thanet Coast SAC. Regardless, the Applicant also cites that the effects of the Proposed Development represent a much smaller extent within the pMCZ than those from the Dover Harbour Board consent when considering the combined effect (section 1.6, paragraph 41 of [**REP5-047**]). The Applicant remains of the view that there will be no AEoI of the Thanet Coast SAC alone and in-combination (including potential effects from suspended sediment and deposition associated with the cable installation and wider cable design envelope including sand wave clearance and cable protection) [section 1.7, **REP5-047**]. The Applicant also provided a revised version of the "*Sand Wave Clearance, Dredging and Drill Arising: Disposal Site Characterisation*" document at Deadline 5 [**REP5-038**].

As discussed in footnote **c** above, NE did not make further submissions on the Dover Harbour Board consent in respect of the Applicant's conclusions of no AEoI in-combination for the Thanet Coast SAC.

At the time of publication of the RIES, NE has not responded directly to the Applicant's SAC and MCZ Clarification Note or sand wave clearance document [**REP5-047** and **REP5-038**], (any such comments would be expected at Deadline 6). However, their views on the Deadline 5 documents were captured in a late submission for Deadline 5 in an updated SoCG [**REP5-076**] (see footnote **i**).

- i.** At Deadline 5 in the SoCG between the Applicant and NE, there is agreement that there will be no AEoI of the Thanet Coast SAC alone or in-combination with other plans and projects (Table 3 of [**REP5-076**]). This agreement specifically cites additional submissions from the Applicant at Deadline 5 (namely the SAC and MCZ Clarification Note [**REP5-047**] and *the "Sand Wave Clearance, Dredging and Drill Arising: Disposal Site Characterisation document"* [**REP5-038**]).

Stage 2 Matrix 2: Thanet Coast and Sandwich Bay SPA

Site Code: UK9012071

Distance to array area: 8.7km accounting for SEZ [REP4B-015]

Distance to cable route: 0km (intersects with the European site boundary)

European site features	Effects on integrity										
	Temporary habitat loss & disturbance	Temporary habitat disturbance	Increased suspended sediment & deposition	Accidental pollution	Onshore noise disturbance	Spread of INNS	Onshore visual disturbance	Displacement of recreational users	In-combination effects		
	C,D	O	C,O,D	C,O,D	C,O,D	C,D	C,O,D	C,D	C	O	D
European golden plover (non-breeding)	X a	X b	X c	X d	X e	X f	X g	X h	X a, d, e, g, h,	X e, g, i	X a, d, e, g, h
Ruddy turnstone (non-breeding)									X d, e, h	X e	X d, e, h
Little tern (breeding)	N/a										

Notes

- a. Temporary habitat loss and disturbance within the intertidal habitats, including the saltmarsh and mudflat foreshore (which provide potential roosting and feeding sites for European golden plover and ruddy turnstone) would occur during construction and

decommissioning of the Proposed Development alone [paragraph 11.2.19, **REP2-018** and **REP2-019**]. In respect of European golden plover, in-combination effects could also occur [paragraphs 12.5.2-12.5.4, **REP2-018** and **REP2-019**]. The Applicant noted [**REP2-013**] that with the removal of Landfall Option 2, there is no predicted permanent loss of saltmarsh. Project mitigation includes a Saltmarsh Mitigation, Reinstatement and Monitoring Plan (SMRMP) [**REP4-020**], the content of which has been agreed with NE [**REP5-064; REP5-066 and REP5-075**]. The Applicant concluded that temporary loss/ disturbance of intertidal habitats will not result in AEoI on the European golden plover and ruddy turnstone features of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [paragraphs 11.2.19-11.2.25; and 12.5.2-12.5.4, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**]. See paragraphs 4.2.4 – 4.2.11 of the RIES.

- b. Temporary disturbance may occur during operation and maintenance within the intertidal habitats, specifically saltmarsh and the mudflat foreshore (which provide potential roosting and feeding sites for European golden plover and ruddy turnstone) [paragraphs 11.2.70-11.2.76, **REP2-018** and **REP2-019**]. Should corrective maintenance be required, the Applicant explained [matrix 26, **REP2-004**] that the potential for habitat disturbance would be similar to that during construction (see footnote **a** above), albeit likely on a reduced scale and duration and the SMRMP [**REP4-020**] would apply. The Applicant considers that the proposed mitigation, combined with previous monitoring of the rapid rate of recovery of similar habitats in the area and the small proportion of the overall habitat temporarily affected, means that there will be no AEoI of the European golden plover and ruddy turnstone features or their supporting habitat [paragraphs 11.2.70- 11.2.76, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**]. See paragraphs 4.2.4 – 4.2.11 of the RIES.
- c. Increased suspended sediment and deposition on intertidal habitats (which provide potential roosting and feeding sites for European golden plover and ruddy turnstone) may occur as a result of construction, operation and decommissioning of the Proposed Development [paragraphs 11.2.49-11.2.53 and 11.2.93-11.2.97, **REP2-018** and **REP2-019**]. In summary, the Applicant considers that the species and habitats found within the intertidal section of the SPA have a high recoverability to changes in suspended sediment and a high (light deposition up to 5cm) to high-medium (deposition >5cm) recoverability following deposition [paragraphs 11.2.50 and 11.2.93, **REP2-018** and **REP2-019**]. Further, the Applicant states that any changes to suspended sediment will be local and the intertidal zone of Pegwell Bay is a naturally an accretion zone [paragraphs 11.2.49-11.2.53 and 11.2.93-11.2.97, **REP2-018** and **REP2-019**]. No AEoI of the site is predicted in this respect [paragraphs 11.2.53 and 11.2.97, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- d. The Applicant considers that the production and implementation of relevant plans, in conjunction with the MMO and NE, will address any concerns around accidental pollution of intertidal habitats (which provide potential roosting and feeding sites for European golden plover and ruddy turnstone) during construction, operation and decommissioning. These plans are summarised in [paragraphs 11.2.2-11.2.5 and 11.2.59-11.2.61, **REP2-018** and **REP2-019**]. Taking account of these plans, the Applicant considers there is sufficient certainty that the risk of accidental pollution at all stages of the project is negligible and there will therefore be no AEoI of the site, either alone or in-combination [paragraphs 11.2.4 and 11.2.61; 12.5.7-12.5.8, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- e. Noise disturbance to European golden plover and ruddy turnstone may occur as a result of construction, operation and decommissioning of the Proposed Development, both alone and in-combination [paragraphs 11.5.10-11.5.14; 11.5.35-11.5.38; 12.5.2-12.5.4; 12.5.9-12.5.12, **REP2-018** and **REP2-019**]. Seasonal restrictions to all works within intertidal habitats and at the shoreline will be implemented, restricting construction and decommissioning works with potential to cause significant noise disturbance to non-breeding waterbirds in Pegwell Bay (including European golden plover and ruddy turnstone) [Table 6.1, **REP2-018** and **REP2-019**]. As detailed in the Outline Landscape and Ecological Management Plan (LEMP) [**REP1-069**], this will prevent any construction, decommissioning and planned operation/ maintenance works (including HDD works if Landfall Option 1 is selected), taking place in these areas during the period October to March inclusive [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant explains that the timing of unplanned operation/ maintenance works is unpredictable, however any such works will be undertaken in consultation with SNCBs at the time such works are required, to determine the need for mitigation in relation to the works required, including the nature and timing of those works [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant concludes that the proposed timing restrictions will avoid noise disturbance to ruddy turnstone and European golden plover and there is no potential for AEoI of the site, alone or in-combination [paragraphs 11.5.14 and 11.5.38; 12.5.4; and 12.5.12, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- f. There is potential for the spread of INNS during construction and decommissioning of the Proposed Development to affect intertidal habitats used by ruddy turnstone and European golden plover [paragraph 11.5.2, **REP2-018** and **REP2-019**]. The Applicant considers that the production, agreement and implementation of the Project Environmental Management Plan (PEMP) and Decommissioning Programme with the MMO and NE will address any concerns around INNS during construction and decommissioning [paragraph 11.5.2, **REP2-018** and **REP2-019**]. Following implementation of these plans the Applicant considers there is sufficient certainty that the risk of INNS at all stages of the Proposed Development is negligible and there will be no AEoI

of the site in this respect [paragraph 11.5.2, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- g.** Visual disturbance to ruddy turnstone and European golden plover may occur as a result of construction, operation and decommissioning of the Proposed Development alone [paragraphs 11.5.10-11.5.14 and 11.5.35-11.5.38, **REP2-018** and **REP2-019**] and in respect to European golden plover, in-combination [paragraph 12.5.13-12.5.14, **REP2-018** and **REP2-019**]. Seasonal restrictions to all works within intertidal habitats and at the shoreline will be implemented, restricting construction and decommissioning works with potential to cause visual disturbance to non-breeding waterbirds in Pegwell Bay (including European golden plover and ruddy turnstone) [Table 6.1, **REP2-018** and **REP2-019**]. As detailed in the Outline LEMP [**REP1-069**], this will prevent any construction, decommissioning and planned operation/ maintenance works (including HDD works if Landfall Option 1 is selected), taking place in these areas during the period October to March inclusive [Table 6.1, **REP2-018** and **REP2-019**]. In addition, any works within 250m of intertidal habitats that are undertaken between October and March but are not covered by seasonal restrictions and are in direct line of sight from intertidal habitats, will only take place following the erection of screening fencing [Table 6.1, **REP2-018** and **REP2-019**; **REP1-069**]. The Applicant explains that the timing of unplanned operation/ maintenance works is unpredictable, however any such works will be undertaken in consultation with SNCBs at the time such works are required, to determine the need for mitigation in relation to the works required, including the nature and timing of those works [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant concludes that the proposed timing restrictions will avoid visual disturbance to ruddy turnstone and European golden plover and there is no potential for AEoI of the site [paragraphs 11.5.14, 11.5.38 and 12.5.13-12.5.14, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- h.** Although construction/ decommissioning works at the shoreline will be subject to a timing restriction and will not take place during October to March inclusive, other works could take place within Pegwell Bay Country Park during the more sensitive winter months. Disturbance to non-breeding ruddy turnstone and European golden plover is therefore possible if recreational users are displaced from the country park to other more sensitive areas elsewhere within Thanet Coast and Sandwich Bay SPA, from the Proposed Development alone [paragraphs 11.5.16-11.5.22, **REP2-018** and **REP2-019**] and in-combination [paragraphs 12.5.5-12.5.6, **REP2-018** and **REP2-019**]. The Applicant stated that car parking data for the period during which construction works for the Nemo Link were taking place strongly suggests that visitor numbers at the country park are not likely to be significantly affected by the proposed construction works. Notwithstanding this, the Applicant has assumed that some displacement of recreational users of the country park is possible [paragraphs 11.5.16-11.5.22, **REP2-018** and **REP2-019**].

The Applicant notes NE is concerned that displaced dog walkers could utilise the intertidal habitats, but considers it very unlikely that displaced visitors would utilise the saltmarsh habitats adjacent to Pegwell Bay Country Park which contain deep, wet creeks and are very difficult to walk across [paragraphs 11.5.16-11.5.22, **REP2-018** and **REP2-019**]. As a precaution, mitigation has been proposed to discourage any displaced visitors from accessing intertidal habitats during the sensitive October to March period – as detailed in [Table 6.1, **REP2-018** and **REP2-019**] and in the Outline LEMP [**REP1-069**]. The Applicant concludes that there will be no AEoI of the site in this respect, either alone or in-combination [paragraphs 11.5.16-11.5.22 and 12.5.5-12.5.6, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- i. The Applicant considers that the potential for displacement of European golden plover from planned maintenance works in intertidal habitats from the operational Proposed Development, in-combination with the new 400kV lines of the operational Richborough Connection, is very small and any effects from each project will affect very different habitat types [paragraph 5.13.24 *et seq*, **APP-061**]. The Applicant concluded that there will be no AEoI in this regard [paragraphs 12.5.13-12.5.14, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

Stage 2 Matrix 3: Thanet Coast and Sandwich Bay Ramsar site

Site Code: UK11070

Distance to array area: 8.7km accounting for SEZ [REP4B-015]

Distance to cable route: 0km (intersects with the European site boundary)

Europe an site feature s	Effects on integrity											
	Tempora ry habitat loss & disturba nce	Permane nt habitat loss	Tempora ry habitat disturba nce	Increased suspended sediment & deposition	Acciden tal pollutio n	Onshore noise disturban ce	Spread of INNS	Onshore visual disturba nce	Displace ment of recreatio nal users	In- combination effects		
	C,D	C	O	C,O,D	C,O,D	C,O,D	C,D	C,O,D	C,D	C	O	D
Ramsar criterion 2: Wetland inverteb rate assembl age	X a	X b	X c	X d	X e	N/a	X g	N/a	N/a	X e	X e	X e
Ramsar criterion 6: Ruddy turnston e (non- breedin g)		N/a				X f		X h	X i	X e, f, i	X e, f	X e, f, i

Notes

- a. Temporary habitat loss and disturbance within the intertidal habitats, including the saltmarsh and mudflat foreshore (which provide potential roosting and feeding sites for ruddy turnstone) would occur during construction and decommissioning of the Proposed Development alone [paragraph 11.2.26-11.2.29, **REP2-018** and **REP2-019**]. The Applicant noted [**REP2-013**] that with the removal of Landfall Option 2, there is no predicted permanent loss of saltmarsh. The temporary habitat loss/ disturbance is explained to only affect a small proportion of the available habitat [paragraph 11.2.27, **REP2-018** and **REP2-019**]. Project mitigation includes a SMRMP [**REP4-020**], the content of which has been agreed with NE [**REP5-064**; **REP5-066** and **REP5-075**]. The Applicant concluded that temporary loss/ disturbance of intertidal habitats will not result in AEoI on the ruddy turnstone feature of the Thanet Coast and Sandwich Bay Ramsar site [paragraph 11.2.28, **REP2-018** and **REP2-019**].

Temporary loss and disturbance of habitats has also been considered in respect to specific species (*Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata*) which form part of the wetland invertebrate assemblage and may be present in the Stonelees Nature Reserve section of the application site [paragraphs 11.2.29-11.2.32; 11.5.4-11.5.9, **REP2-018** and **REP2-019**]. Following advice from NE [**RR-053**], this included consideration of the bug *Orthotylus rubidu*, the presence of which could not conclusively be ruled out [paragraphs 11.2.29-11.2.32, **REP2-018** and **REP2-019**]. Mitigation of relevance to these invertebrate species including *Orthotylus rubidus* is set out in Table 6.1, paragraphs 11.2.31 and 11.5.7 [**REP2-018** and **REP2-019**] and includes the implementation of the SMRMP [**REP4-020**] and a Terrestrial Invertebrate Mitigation Strategy (TIMS) (informed by a detailed invertebrate survey), which would form part of the detailed LEMP [Table 6.1; paragraphs 11.2.31 and 11.5.7, **REP2-018** and **REP2-019**]. The Applicant considers that *Didineis lunicornis* and *Orthotylus rubidus* will readily recolonise new areas of suitable habitat [paragraphs 11.2.31 and 11.5.8, **REP2-018** and **REP2-019**]. Habitat features supporting *Ectemnius ruficornis* and *Eluma caelata* would be translocated where possible [paragraph 11.5.7, **REP2-018** and **REP2-019**]. The Applicant considers that with the mitigation proposed, temporary habitat loss and disturbance would not result in an AEoI on the wetland invertebrate assemblage [paragraphs 11.2.32 and 11.5.5-9, **REP2-018** and **REP2-019**].

NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**]. See paragraphs 4.2.4 – 4.2.11 of the RIES.

- b. Paragraphs 9.5.4 and 11.5.4-11.5.9 of the RIAA [**REP2-018** and **REP2-019**] refer only to short term/ temporary loss of habitats supporting the wetland invertebrate assemblage species. On this basis, the Applicant concludes no AEoI of the wetland invertebrate feature of the Ramsar site [paragraph 11.5.9, [**REP2-018** and **REP2-019**]. However, the Applicant's integrity matrix for this site (footnote b, Matrix 27 [**REP2-004**]) states that some permanent loss of habitats for wetland invertebrate assemblage

species, if present within the Stonelees Nature Reserve section of the application site, is possible. The ExA understands the reference to permanent loss of habitats in this context to be erroneous. Following the removal of Landfall Option 2 (meaning there would be no permanent loss of saltmarsh habitat), NE agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- c. Temporary disturbance may occur during operation and maintenance within the intertidal habitats (saltmarsh and the mudflat foreshore, which may be used by roosting and feeding ruddy turnstone and by the bug *Orthotylus rubidus*) and in the Stonelees Nature Reserve section of the application site (in which *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata* may be present) [paragraphs 11.2.77-11.2.82 and 11.5.31-11.5.34, **REP2-018** and **REP2-019**]. Should corrective maintenance be required, the Applicant explained [matrix 27, **REP2-004**] that the potential for habitat disturbance would be similar to that during construction (see footnote **a** above), albeit likely on a reduced scale and duration and the SMRMP [**REP4-020**] would apply. In summary, the Applicant considers that with the proposed mitigation (including TIMS, LEMP and SMRMP), temporary habitat disturbance during operation/ maintenance would not result in an AEoI of ruddy turnstone or the wetland invertebrate assemblage [paragraphs 11.2.77-11.2.82 and 11.5.31-11.5.34, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- d. Increased suspended sediment and deposition on intertidal habitats (which may be used by roosting and feeding ruddy turnstone and by the bug *Orthotylus rubidus*) may occur as a result of construction, operation and decommissioning of the Proposed Development [paragraphs 11.2.54-11.2.58 and 11.2.98-11.2.101, **REP2-018** and **REP2-019**]. The Applicant considers that the wetland invertebrate assemblage species *Orthotylus rubidus* is not likely to be affected by increases in suspended sediment and deposition, even if present [paragraph 11.2.57, **REP2-018** and **REP2-019**]. In summary, the Applicant considers any changes to suspended sediment and deposition will be local/ short term and that the habitats are naturally accreting [paragraphs 11.2.56, 11.2.58, 11.2.51-55 and 11.2.98, **REP2-018** and **REP2-019**]. No AEoI of the site is predicted in this respect [paragraphs 11.2.56, 11.2.58, 11.2.99, 11.2.101, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- e. The Applicant considers that the production and implementation of relevant plans, in conjunction with the MMO and NE, will address any concerns around accidental pollution of intertidal habitats (which provide potential habitat for roosting and feeding ruddy turnstone and for the wetland invertebrate assemblage species *Orthotylus rubidus*) during construction, operation and

decommissioning. The mitigation measures and relevant plans are summarised in [paragraphs 11.2.2-11.2.5 and 11.2.59-11.2.61 and Table 6.1, **REP2-018** and **REP2-019**]. Taking account of these mitigation measures/ plans, the Applicant considers there is sufficient certainty that the risk of accidental pollution at all stages of the Proposed Development is negligible and there will therefore be no AEoI of the site, either alone or in-combination [paragraphs 11.2.4 and 11.2.61, 12.5.7-12.5.8, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone and in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- f. Noise disturbance to ruddy turnstone may occur as a result of construction, operation and decommissioning of the Proposed Development, both alone and in-combination [paragraphs 11.5.10-11.5.15 and 12.5.9-12.5.12, **REP2-018** and **REP2-019**]. Seasonal restrictions to all works within intertidal habitats and at the shoreline will be implemented, restricting construction and decommissioning works with potential to cause significant noise disturbance to non-breeding waterbirds in Pegwell Bay (including ruddy turnstone) [Table 6.1, **REP2-018** and **REP2-019**]. As detailed in the Outline LEMP [**REP1-069**], this will prevent any construction, decommissioning and planned operation/ maintenance works (including HDD works if Landfall Option 1 is selected), taking place in these areas during the period October to March inclusive [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant explains that the timing of unplanned operation/ maintenance works is unpredictable, however any such works will be undertaken in consultation with SNCBs at the time such works are required, to determine the need for mitigation in relation to the works required, including the nature and timing of those works [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant concludes that the proposed timing restrictions will avoid noise disturbance to ruddy turnstone and there is no potential for AEoI of the site, alone or in-combination [paragraphs 11.5.15, 11.5.38 and 12.5.12, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- g. There is potential for the spread of INNS during construction and decommissioning of the Proposed Development to affect intertidal habitats (used by ruddy turnstone and the wetland invertebrate assemblage species *Orthotylus rubidus*, if present) [paragraphs 11.5.2 and 11.5.27, **REP2-018** and **REP2-019**]. The Applicant states there are no known stands of INNS within 500m of Stonelees Nature Reserve (in which the wetland invertebrate species *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata* may be present) [paragraphs 11.5.27-11.5.30, **REP2-018** and **REP2-019**]. The Applicant considers that the production, agreement and implementation of relevant plans including the PEMP, Decommissioning Programme and Construction Environmental Management Plan (CEMP) with relevant stakeholders will address any concerns around INNS during construction and decommissioning [paragraphs 11.5.2 and 11.5.29, **REP2-018** and **REP2-019**]. Following implementation of these plans the Applicant considers there is sufficient certainty that the risk of INNS at all stages of the Proposed Development is negligible and

there will be no AEoI of the site in this respect [paragraphs 11.5.2 and 11.5.30, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay Ramsar site, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

- h.** Visual disturbance to ruddy turnstone may occur as a result of construction, operation and decommissioning of the Proposed Development [paragraphs 11.5.10-11.5.15 and 11.5.35-11.5.38, **REP2-018** and **REP2-019**]. Seasonal restrictions to all works within intertidal habitats and at the shoreline will be implemented, restricting construction and decommissioning works with potential to cause significant visual disturbance to non-breeding waterbirds in Pegwell Bay (including ruddy turnstone) [Table 6.1, **REP2-018** and **REP2-019**]. As detailed in the Outline LEMP [**REP1-069**], this will prevent any construction, decommissioning and planned operation/ maintenance works (including HDD works if Landfall Option 1 is selected), taking place in these areas during the period October to March inclusive [Table 6.1, **REP2-018** and **REP2-019**]. In addition, any works within 250m of intertidal habitats that are undertaken between October and March but are not covered by seasonal restrictions and are in direct line of sight from intertidal habitats, will only take place following the erection of screening fencing [Table 6.1, **REP2-018** and **REP2-019**; **REP1-069**]. The Applicant explains that the timing of unplanned operation/ maintenance works is unpredictable, however any such works will be undertaken in consultation with SNCBs at the time such works are required, to determine the need for mitigation in relation to the works required, including the nature and timing of those works [Table 6.1, **REP2-018** and **REP2-019**]. The Applicant concludes that the proposed timing restrictions will avoid visual disturbance to ruddy turnstone and there is no potential for AEoI of the site [paragraphs 11.5.15 and 11.5.38, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].
- i.** Although construction/ decommissioning works at the shoreline will be subject to a timing restriction and will not take place during October to March inclusive, other works could take place within Pegwell Bay Country Park during the more sensitive winter months. Disturbance to non-breeding ruddy turnstone is therefore possible if recreational users are displaced from the country park to other more sensitive areas within Thanet Coast and Sandwich Bay Ramsar site, from the Proposed Development alone [paragraphs 11.5.16-11.5.23, **REP2-018** and **REP2-019**] and in-combination [paragraphs 12.5.5-12.5.6, **REP2-018** and **REP2-019**]. The Applicant stated that car parking data for the period during which construction works for the Nemo Link were taking place strongly suggests that visitor numbers at the country park are not likely to be significantly affected by the proposed construction works. Notwithstanding this, the Applicant has assumed that some displacement of recreational users of the country park is possible [paragraphs 11.5.16-11.5.23, **REP2-018** and **REP2-019**].

The Applicant notes NE is concerned that displaced dog walkers could utilise the intertidal habitats, but considers it very unlikely that displaced visitors would utilise the saltmarsh habitats adjacent to Pegwell Bay Country Park which contain deep, wet creeks and are very difficult to walk across [paragraphs 11.5.16-11.5.23, **REP2-018** and **REP2-019**]. As a precaution, mitigation has been proposed to discourage any displaced visitors from accessing intertidal habitats during the sensitive October to March period – as detailed in [Table 6.1, **REP2-018** and **REP2-019**] and in the Outline LEMP [**REP1-069**]. The Applicant concludes that there will be no AEoI of the site in this respect, either alone or in-combination [paragraphs 11.5.22 and 12.5.5-12.5.6, **REP2-018** and **REP2-019**]. NE has agreed there will be no AEoI of the Thanet Coast and Sandwich Bay SPA, either alone or in-combination [Table 5, **REP5-075**]. KWT considered it is not possible to exclude AEoI [**REP3-081**].

Stage 2 Matrix 4: Southern North Sea SAC

Site Code: UK0030395

Distance to array area: 0km (intersects) [**REB4B-015**]

Distance to cable route: 4km (based on [**APP-032**])

European site features	Effects on integrity			
	Accidental pollution	Underwater noise	In-combination effects	
	C,O,D	C,D	C,D	O
Harbour porpoise	X a	X b	? a,c	X a

Notes

- a. The Applicant is of the view that the production, agreement and implementation of relevant plans with the MMO and NE will address any concerns around accidental pollution during construction, operation and decommissioning. These measures are summarised in Table 7.15 of [**APP-048**] and paragraphs 11.3.3 – 11.3.4 and 11.3.103 -11.3.105 of [**REP2-018** and **REP2-019**].

Paragraphs 12.3.2 – 12.3.4 (construction and decommissioning) and 12.3.54 – 12.3.56 (operation and maintenance) of [**REP2-018** and **REP2-019**] confirm the Applicant's rationale and conclusions in-combination with other plans and projects in respect of accidental pollution are the same.

Following implementation of the relevant plans, the Applicant considers there is sufficient certainty that the risk of accidental pollution at all stages of the Proposed Development is negligible and there will therefore be no AEoI (alone and in-combination with other plans and projects) [paragraph 11.3.4, **REP2-018** and **REP2-019**].

No concerns have been raised by IPs around the conclusions of AEoI from accidental pollution in respect of marine mammals at the Southern North Sea SAC, alone or in-combination, through all phases of the Proposed Development.

- b. A number of sources of underwater noise have been considered, including clearance of unexploded ordnance (UXO), pile driving, vessel activity and seabed preparation (paragraph 11.3.8 of [**REP2-018** and **REP2-019**]). The potential for these to result in an

adverse effect has been considered against the three conservation objectives associated with the SAC, together with the seasonal variability of harbour porpoise presence in the SAC and temporal nature of the works.

Project specific mitigation for underwater noise includes a draft Marine Mammal Mitigation Protocol (MMMP) (to address the viability aspects considered within the first conservation objective), together with management of activity to ensure the daily and seasonal noise thresholds would not be exceeded (and therefore address the second conservation objective) [Table 6.1, **REP2-018** and **REP2-019**].

Paragraph 11.3.55, Table 11.3 and Figure 9.5 of [**REP2-018** and **REP2-019**] explain that the minimum distance between the array boundary and the summer seasonal component of the SAC is 229km, and therefore, for operations within the summer season, there is no spatial effect within the SAC. Any noisy works at the Proposed Development during the summer season (April to September inclusive) are not relevant to the HRA process due to the summer extents of the SAC being beyond the maximum 26km screening distance of effect. The Applicant is of the view that their various piling construction scenarios clearly demonstrate that under no circumstance will any piling scenario exceed the daily maximum or seasonal average at the SAC.

The Applicant also states that there will be no significant effects on the availability and density of suitable prey and the prey habitat (on the basis that *"there is no evidence of a pathway to link underwater noise to the seabed and water column characteristics referred to in the Conservation Objective"* [paragraph 11.3.23, **REP2-018** and **REP2-019**].

The Applicant's view is that all three conservation objectives of the SAC will be met and that, therefore, there will be no AEoI (project alone) (summarised in paragraphs 11.3.106 – 11.3.108 of [**REP2-018** and **REP2-019**]).

In sections 4.6 (page 12) and 5.4 (page 27) of [**RR-053**], NE raised concerns around the conclusion of no AEoI alone in terms of noise during construction and decommissioning activities. These concerns included assumed effectiveness of *"soft start"* piling equipment techniques mitigation and the potential underestimation of the piling impacts in the Applicant's modelling. In response to the ExQ1 (Q1.1.22 of [**REP1-116**]), NE confirmed it was now content with the approach to the Applicant's assessment of *"soft start"* piling. The SoCG between the Applicant and NE at Deadline 2 also captured the methodological agreement in this regard in Table 8 [**REP1-073**, updated by **REP5-076**].

The MMO stated in its submission at Deadline 3 (paragraph 2.1.3 of [**REP3-078**]) a need for revised DML condition wording around cessation of piling activities and notification where noise levels may be greater than previously predicted (in order to agree any potential additional monitoring or mitigation measures). Without such revisions, *"the MMO's power is limited to instructing on*

the need for additional monitoring only, with no remit to instruct cessation of piling whilst this is explored." NE also supported amended wording to the DML (see item pages 15 and 16 of [RR-053] and 1.1.22 of [REP2-045]), stating that it *"is required to ensure that in the event that the assessment of the noise monitoring report demonstrates an impact more significant than that assessed in the ES is occurring, operations cease until appropriate increased mitigation and/or monitoring can be agreed and implemented"*. At Deadline 5A, in their comments on the Deadline 5 version of the dDCO [REP5-019], the MMO reiterated their position on the need for revised wording around cessation of piling activities [REP5A-003].

In the SoCG between the Applicant and NE [REP3-042], [REP5-076], the disagreement of no AEoI conclusions appears to apply to in-combination effects (see footnote c) and the conclusions for the Proposed Development alone are not specifically stated as being in dispute, despite the disagreement over the DML condition wording around power for cessation of piling activities.

At Deadline 5 [section 3.3, REP5-016] the Applicant cites its understanding of agreement with NE to no AEoI on the Southern North Sea SAC (Proposed Development alone). This is also repeated in the Deadline 5 iteration of the Applicant's SoCG with NE [REP5-076].

- c. Paragraph 12.3.11 of [REP2-018 and REP2-019] sets out that the in-combination assessment of underwater noise during construction includes UXO clearance, piling, and geophysical surveys but excludes increased vessel traffic, cable laying/ dredging/ foundation installation and acoustic deterrent devices.

The Applicant's assessment of the potential for in-combination effects during construction and decommissioning was determined based on timing and location in relation to the other projects considered (Table 12.1 of [REP2-018 and REP2-019]). The combination of project specific mitigation [Table 6.1, REP2-018 and REP2-019], the potential for temporal overlap, the seasonal variability of harbour porpoise presence in the SAC, and the staggered nature of construction would ensure that the requirements of the conservation objectives would not be exceeded and therefore no AEoI would result (in the view of the Applicant). This is summarised in paragraphs 12.3.15 – 12.3.47 of [REP2-018 and REP2-019].

NE identified in sections 4.6 (page 12) and 5.4 (page 27) of [RR-053], concerns around the conclusion of no AEoI in-combination in terms of noise during construction and decommissioning activity, including: the exclusion of "Tier 2" projects within the in-combination assessment, the apparent exclusion of in-combination assessment of average oil and gas activities based on historic activity and the Marine Noise Registry, and the Applicant's assertion in Table 12.2 and paragraphs 12.3.15 and 12.3.19 of the original RIAA [APP-031] that there is no prospect of temporal overlap with piling activities of the Proposed Development and that of East Anglia 1, Hornsea 3, or Norfolk Vanguard projects.

NE also considered that an additional condition should be included as part of the generation assets DML (to require the production of a Site Integrity Plan (SIP)) and some adjustments made to the wording of the existing DML condition in relation to the Southern North Sea SAC and the potential for significant impacts on harbour porpoise [pages 15 and 16, **RR-053**].

The Applicant updated the RIAA at Deadline 2 to revise the marine mammal in-combination assessment and include new project information (post June 2018) and include consideration of Tier 2 projects [Table 4.2, **REP2-018** and **REP2-019**].

Submissions from NE at Deadline 1 [Section 6.4.38, **REP1-113**], [Q1.1.27, **REP1-116**] and the SoCG (Table 8, page 50 of [**REP1-073**]) provided NE's views around the ongoing 'Southern North Sea cSAC: Review of Consents' being undertaken. The Department for Business, Energy and Industrial Strategy and the MMO has published a draft HRA for consultation (see paragraph 4.2.47 of the RIES). NE is of the view that some of the in-combination scenarios presented in the Review of Consents draft HRA report indicate that noise thresholds for the Southern North Sea SAC (as advised by the SNCBs) could be exceeded by wind farm projects constructing at the same time (and other noisy activities from other marine sectors). As such, the Proposed Development *"may need to include mitigation to reduce the spatio-temporal disturbance footprint (e.g. through the use of noise mitigation systems or alternative foundations, by ensuring the location of simultaneous piling reduces the spatial extent within the cSAC, or by looking at concurrent piling in close proximity so the deterrence footprints overlap)"* [Q1.1.27, **REP1-116**].

NE remained concerned around the lack of clarity on how SIP conditions will ensure that mitigation will be put in place to prevent exceedance of the SNCB thresholds for disturbance, advising that *"A process will need to be developed by the regulators to ensure continuing adherence to the SNCB thresholds as multiple SIPs are developed over time, especially when piling can take place over several years, and new projects can come online during this time. Should potential exceedance of the thresholds occur, a process for dealing with this issue needs to be in place – the affected developers / industries will need to work together with the regulator and SNCBs to prevent adverse effect on the SCI."*

At Deadline 2 a draft version of the Outline SIP² was submitted to the Examination [**REP2-033**, superseded by **REP4-022**].

At [**REP3-075**], NE welcomed the revisions to the Tier 2 assessment and the revised figures in Tables 12.4 and 12.5 in [**REP2-018** and **REP2-019**], but reiterated their concerns in respect of the SIP implementation expressed at Deadline 1. NE provided

² [**REP2-033** and **REP4-022**] are referred to as *"Draft Site Integrity Plan"*. This document has since been included as a document to be certified within schedule 13 of the dDCO [**REP5-019**] (being the latest version at the time of publication of this RIES). All references in this RIES and accompanying matrices are made to the Applicant's Draft SIP as being the *"Outline SIP"* for the purposes of the dDCO

comments on the original draft of the Outline SIP in the Deadline 3 iteration of their SoCG with the Applicant [page 22, **REP3-042**], again reiterating previous concerns around implementation of the SIP. [**REP3-075**] states that *"Until the mechanism by which the SIPs will be managed, monitored and reviewed is developed, NE are unable to advise that this approach is sufficient to address the in-combination impacts and therefore the risk of Adverse Effect on Integrity on the Southern North Sea SCI cannot be fully ruled out* (Table 3 of [**REP3-075**]).

The MMO provided comments on the Outline SIP in section 2.3 of [**REP3-078**] and Table 9 of [**REP3-039**], in particular: *"...noting that the purpose of a SIP to ensure no risk to Adverse Effect on Integrity (AEoI), MMO seek clarity on how it will be demonstrated that the project will stay within the thresholds and conclusions in the HRA."*

In respect of the Outline SIP, the Applicant's position is that developing a mechanism to *"manage, monitor and review the various SIPs anticipated to come forward"* is outside their jurisdiction, and that the RIAA [**REP2-018** and **REP2-019**], MMMP [**APP-146**] and Outline SIP [**REP4-022**] provide certainty that an AEoI will be avoided with respect to the SAC. The Applicant goes on to state that *"the mitigation is wholly within the ability of the Applicant to deliver (with no ambiguity as regards its success), with sign off required from MMO on the appropriateness of that mitigation through the SIP process"*.

In terms of the need for *"additional mitigation"* cited by the MMO [in section 2.3, **REP3-078**], the Applicant is of the view that there is sufficient certainty of the current provisions through a combination of the seasonal variability of harbour porpoise within the SAC and the location of the Proposed Development (in respect of the winter and summer extents of the SAC as shown in Figure 9.5 and described at paragraph 9.6.4 and 9.6.5 of [**REP2-018** and **REP2-019**] (see also footnote **b** of this RIES). In the written representation of KWT, concerns were expressed over the appropriateness of splitting the Southern North Sea SAC into summer and winter units [**REP1-102**], though this does not appear to be disputed by other IPs.

The Applicant maintains that *"the inclusion in the mitigation of a seasonal restriction means the mitigation is wholly within the ability of the Applicant to control, commit to and deliver"*, and that *"The actual need for such a seasonal restriction (if any) will be determined at the point the SIP is drafted, and may in practice result in a single winter season being excluded, or a single month, or a combination or no restriction. The mitigation does not require different construction techniques, different infrastructure or additional equipment on site, nor does it require liaison or discussion with other developers"*. These commitments are set out in paragraph 21-25 of the Outline SIP [**REP4-022**]. This appears to include the commitment of the Applicant to maintain a *"watching brief"* on the East Anglia THREE project's construction *"in line with the timeframe identified"* in [**REP4-022**].

At Deadline 5, the Applicant presented a table to summarise its evidence to support the conclusions of no AEoI with respect to the Southern North Sea SAC [Table 3, **REP5-016**]. The Applicant re-iterated its position: *"DCO commitment to mitigation (the MMMP and the SIP) to ensure no AEoI on the harbour porpoise (with the DCO condition requiring final mitigation to be agreed by the MMO prior to relevant activities commencing)"* and that *"Mitigation measures proposed provide certainty that no AEoI would result (given that the extreme end of the mitigation, if required, would be a complete winter seasonal restriction, which would remove Thanet Extension from all HRA considerations for the SNS [Southern North Sea] SAC for harbour porpoise)"*.

In [**REP5-064**], NE welcomed the commitments made within the Outline SIP regarding the mitigation methods in section 4 of [**REP4-022**]. Subject to these commitments being secured in the DCO/ DML, this would allow NE *"to conclude no Adverse Effect on Integrity on the harbour porpoise feature of the Southern North Sea SAC"*.

The position reflected in NE's latest SoCG with the Applicant [**REP5-076**] reiterates NE's position at Deadline 3 (i.e. remaining concerns with the conclusions of no AEoI in-combination due to uncertainties around the mechanism by which the Outline SIPs will be managed [**REP3-042**]). The SoCG appears not to have been updated on this particular topic area to reflect the position of NE in [**REP5-064**] around agreement of no AEoI of the SAC.

The ExA notes the stated agreement of no AEoI with NE does not appear to be contingent on the acceptance of NE's (and the MMO's) request for revised wording in the DML conditions around cessation of piling, as discussed in footnote **b** above. This matter has been raised as item 44 in [**PD-017**] with the Applicant, MMO and NE invited to make further representations on this point at Deadline 6.

Stage 2 Matrix 5: Outer Thames Estuary SPA

Site Code: UK9020309

Distance to array area: 7.65 km³ accounting for SEZ [REP4B-015]

Distance to cable route: 7km (based on [APP-032])

European site features	Effects on integrity							
	Disturbance and displacement			Collision risk	Barrier effect	In-combination effects		
	C	O	D	O	O	C	O	D
Red-throated diver (non-breeding)	X a	X a	X a	N/a	N/a	X d	? e	X d
Common tern (breeding)	N/a	N/a	N/a	X b	X c	X f	X b,c,f	X f
Little tern (breeding)								

Notes

- a. Disturbance and consequent displacement from the Proposed Development alone was considered in detail in the RIAA (paragraphs 11.4.7 – 11.4.14 of [REP2-018 – REP2-019]). It concluded no AEoI of the site based on a prediction of displacement resultant mortality to a small number of individuals that makes no material difference to the long-term maintenance of the red throated diver population of the Outer Thames Estuary SPA. In the RIAA Addendum, [REP4B-015], the Applicant concluded there are no

³ Matrix 32, page 114 of [REP2-004] states a distance of 4km. However, as explained in section 2.2 of the Addendum to the Report to Inform Appropriate Assessment (following the Structure Exclusion Zone (SEZ)) [REP4B-016], the effect of the SEZ has increased the distance between the SPA boundary and the closest WTG to 7.65km.

material changes to the conclusions of the RIAA [**REP2-018** and **REP2-019**] as a result of the SEZ. Their view is that the SEZ does *"provide greater weight behind those conclusions by strengthening the evidence base used to inform them"* on the basis of the increased distance between the SPA boundary and the closest WTG from 4km (pre-SEZ) to 7.65km (with SEZ in place). This position is also discussed in [**REP4-023**]; section 3.3 states that the SEZ reduces the array to an area of 59.5km² (reduction of 13.3km², or 18.3%) compared to that assessed prior to the SEZ, which has a reducing effect on the calculations around of displacement effects. The Applicant also states that whilst the SEZ was developed as mitigation for shipping/ navigation, it also affords mitigation for features of the Outer Thames Estuary SPA [**REP4B-015**].

NE and RSPB raised concerns around the applied displacement methodology [**RR-053**] and [**RR-057**], advocating that the Applicant's methodology for assessing displacement for red throated diver (construction, operation and decommissioning) does not follow agreed SNCB guidance⁴ (which assumes 100% displacement across a 4km buffer). There were also concerns noted from the Applicant's reliance on post-consent monitoring from Thanet and Kentish Flats Offshore wind farms to inform their assessment (paragraph 6.4.4 of NE's WR [**REP1-113**]. ExQ 1.1.11 [**PD-012**] sought clarification on these points.

In response, the Applicant recognised the difference in opinion on the assessment of displacement for red throated divers and provided additional displacement matrices for red throated diver, Annex C of Deadline 1 Submission (Appendix 1, Annex D to Deadline 1 Submission [**REP1-023**]. In response to this at Deadline 2, NE stated that *"whether or not the applicant's or our recommended methodology is used the overall conclusions are unchanged"* (page 33, Q1.1.11 of [**REP2-045**]). It was also subsequently agreed with NE in the Examination through the SoCG process that *"that Thanet Extension will not have an adverse effect on the integrity on the red-throated diver population of the Outer Thames Estuary SPA when considered alone"* [**REP4C-008**; superseded by **REP5-077**]. NE also stated that in respect of introduction of the SEZ, *"we acknowledge that there is now some uncertainty whether there would be any displacement effects, given the distance that the project is now planned to be from the SPA. However, it cannot be concluded that there will be no displacement effect at all"* [**REP4C-008**; superseded by **REP5-077**]. This was reiterated in the response of NE at Deadline 5 [section 7, **REP5-064**].

- b. Collision risk for the Proposed Development alone for common tern and little tern was considered in the RIAA [paragraphs 11.4.122 – 11.4.129, **REP2-018** and **REP2-019**]. It concluded no AEoI of the site based on a prediction of collision resultant

⁴ MIG-Birds, 2017. *Joint SNCB Interim Displacement Advice Note: Advice on how to present assessment information on the extent and potential consequences of seabird displacement from Offshore Wind Farm (OWF) developments.* (http://jncc.defra.gov.uk/pdf/Joint_SNCB_Interim_Displacement_AdviceNote_2017.pdf)

mortality to less than a single individual that makes no material difference to the long-term maintenance of the tern species population of the Outer Thames Estuary SPA (Proposed Development alone).

The Outer Thames Estuary SPA is not listed in section 12.4.26 of [REP2-018 and REP2-019] as one of the sites as having potential collision related mortality AEoI in-combination with the Proposed Development.

The conclusions of no AEoI for collision risk to common tern and little tern (alone and in-combination) at the Outer Thames Estuary SPA have not been disputed by IPs during the Examination. NE's dispute of the conclusions of no AEoI does not appear to relate to collision mortality to these species [REP5-077].

- c. The Applicant has concluded no AEoI from barrier effects during operation based on based on the "*extremely low number of the common and little tern interest features using the site and the minimal effect of deviating around the site on migration that makes no material difference to the long-term maintenance of the tern species population of the Outer Thames Estuary SPA*" (footnote c of matrix 32, [REP2-004]). Sections 9.10 (site summary), 11.4 and 12.4 of the RIAA (offshore ornithology alone and in-combination respectively) [REP2-018 and REP2-019] make no specific reference to barrier effects, (but LSE is concluded for barrier effects on common tern and little tern in matrix 17 of [REP2-004]).

In response to the ExQ1 (Q1.1.16 of [REP1-024]) the Applicant explained that "*the significance of the barrier effect for all species assessed was 'negligible adverse'*" (paragraphs 4.1.153 – 4.1.155 of [APP-045]). NE's response to the Applicants response to Q1.1.6 [REP2-045] agrees that the significance of barrier effects is negligible.

The conclusions of no AEoI for barrier effects (alone and in-combination) at the Outer Thames Estuary SPA have not been disputed by IPs during the Examination. NE's dispute of the conclusions of no AEoI does not appear to relate to barrier effects to these species [REP4C-008, REP5-077].

- d. See also footnote a above around the methodological disputes in assessment of displacement effects.

Cable corridor

Disturbance and consequent displacement by the Proposed Development during construction (in-combination) was considered in the RIAA (paragraphs 12.4.2-12.4.10 of [REP2-018 and REP2-019]). It concluded no AEoI of the site based on cable laying for Nemo Link not occurring in the same year as the Proposed Development and that any successive cable laying is each of short duration and takes place in waters that do not support significant populations of red throated diver (both cable laying operations

avoid the Outer Thames Estuary SPA) and for these reasons makes no difference to the long-term maintenance of the red throated diver population of the Outer Thames Estuary SPA.

Wind farm array

Paragraphs 12.4.2-12.4.10 of [REP2-018 and REP2-019]) do not specifically consider construction effects of the wind farm array itself in terms of in-combination displacement effects during construction.

- e. Operational disturbance and consequent displacement by the Proposed Development in-combination was considered in the RIAA (paragraphs 12.4.11 – 12.4.45 of [REP2-018 – REP2-019]). The Applicant concluded no AEoI of the site based on a prediction of displacement resultant mortality to a small number of individuals that makes no material difference to the long-term maintenance of the red throated diver population of the Outer Thames Estuary SPA. In the RIAA addendum, [REP4B-015], the Applicant concludes there are no material changes to the conclusions of the RIAA [REP2-018 and REP2-019] as a result of the SEZ (see footnote **a** above about increased distance between the SPA boundary and the closest wind turbine from 4km (pre-SEZ) to 7.65km (with SEZ in place)).

NE does not agree to the conclusion of no AEoI in-combination of red throated diver in-combination with other plans and projects. [REP5-066 and REP5-077] (and in other submissions).

NE's comments around the methodology for assessing the impacts on red throated diver (as described in footnote **a** above) extend to the consideration of in-combination effects. At Deadline 1 (in response to the relevant representations of NE [RR-053] and ExQ1 (1.1.11 of [PD-012])), the Applicant provided a Red-throated diver in-combination assessment methodology document (Appendix 1, Annex C of Deadline 1 [REP1-023]). The purpose of the document was to include more detail with respect to the methodology applied and the data used in coming to the conclusions in the ES and RIAA. NE provided comments on the Applicants Red-throated diver in-combination assessment methodology document as part of their written representation (paragraphs 6.4.3 – 6.4.10 of [REP1-113]): "*To summarise, although Natural England disagrees with some aspects of the methodology used to assess red throated diver displacement, we acknowledge that if the recommended methodology were used, it is likely that the overall conclusions would remain the same. This is that there is no AEoI or significant effect from the project alone, and the contribution made to the in-combination and cumulative totals is small enough not to make a material difference*". This was reiterated by NE at Deadline 2 (page 33, Q1.1.11 of [REP2-045]).

In the Applicant's SoCG with NE at Deadline 4C [**REP4C-008**], NE expressed its view that "*...it is not possible to rule out an adverse effect on integrity when the project is considered in combination with consented and operational offshore windfarm projects (OWF) projects...Displacement effects on red-throated diver from post-construction monitoring appear to vary between projects, but have been reported up to and beyond 8km, and there is therefore potential for the proposal to exert additional displacement pressure on the SPA. This in-combination contribution is in all likelihood very small in the context of impacts from other OWF projects which lie within, rather than some distance beyond, the SPA. Following the introduction of the SEZ we acknowledge that there is now some uncertainty whether there would be any displacement effects, given the distance that the project is now planned to be from the SPA. However, it cannot be concluded that there will be no displacement effect at all.*" NE's position on this matter remained unchanged in an updated version of the Offshore Ornithology SoCG, submitted at Deadline 5 [**REP5-077**].

At Deadline 5, the Applicant presented a table to summarise their evidence to support the conclusions of no AEoI with respect red throated diver in-combination effects at the Outer Thames Estuary SPA [Table 2, **REP5-016**].

At paragraph 43 of [**REP5-016**], the Applicant emphasised its position that the SEZ places the Proposed Development array boundary "*at the extreme limit of the (very precautionary) Natural England 8km screening distance*" and that this 8km range is in their view "*overly precautionary for Thanet Extension, with site specific data indicating displacement falling to zero within 4km and displacement less than 100% even within the existing wind farm area*".

Section 7 of NE's Deadline 5 submission [**REP5-064**] sets out that their previous conclusion remains; whilst "*There is some uncertainty whether there is likely to be any contribution to in-combination displacement effects given the distance between Thanet Extension and the OTE SPA, now that the SEZ forms part of the application...due to the existing displacement effects from operational projects it is not possible for Natural England to state that there is no adverse effect in-combination beyond reasonable scientific doubt*".

As recorded in the latest version of the Offshore Ornithology SoCG between the Applicant and NE [**REP5-077**], in-combination effects on the integrity of the Outer Thames Estuary SPA with regards red throated diver remained under discussion.

- f. In-combination effects for little tern and common tern have not been considered in Matrix 32, page 114 of [**REP2-004**]. They are also not considered in section 12.4 of [**REP2-018** and **REP2-019**], which only considers in-combination effects at the outer Thames Estuary SPA in terms of red throated diver. The Applicant's approach to the assessment of in-combination effects for

offshore ornithology is set out in section 8.5 of [**REP2-018** and **REP2-019**]. These conclusions in respect of in-combination effects on little tern and common tern at the Outer Thames SPA have not been disputed by IPs during the Examination.

Stage 2 Matrix 6: Flamborough and Filey Coast SPA

Site Code: UK9006101

Distance to array area: 312.07km accounting for SEZ [**REP4B-015**]

European site features	Effects on integrity							
	Disturbance and displacement			Collision risk	Barrier effect	In-combination effects		
	C	O	D	O	O	C	O	D
Gannet (breeding)	N/a	N/a	N/a	X b,d	X i	N/a	? f, g, i	N/a
Kittiwake (breeding)				X c,d			? f, i	
Guillemot (breeding)	X a	X a	X a	N/a	N/a	X h	X h	X h
Razorbill (breeding)								
Breeding seabird assemblage				X e				

Notes

- a. Disturbance and consequent displacement from the Proposed Development alone was considered in the RIAA (11.4.15 – 11.4.37 (construction) and 11.4.73 – 11.4.92 (operation and maintenance) of [**REP2-018** and **REP2-019**]). It concluded no AEoI of the site based on a prediction of displacement resultant mortality to a small number of guillemot and razorbill that makes no material difference to the long-term maintenance of the guillemot and razorbill populations of the Flamborough and Filey Coast SPA. These conclusions also applied to the breeding seabird assemblage (in respect of the species considered).

These conclusions in respect to construction and operational displacement of these species of the Flamborough and Filey Coast SPA have not been disputed by IPs during the Examination.

NE has not specifically agreed that the Proposed Development will not have an AEoI of the guillemot or razorbill populations of the Flamborough and Filey Coast SPA. These species at this site are not listed as being of concern or in dispute in the SoCG between NE and the Applicant [**REP5-077**].

- b.** Collision risk to gannet from the Proposed Development alone during operation was considered in the RIAA [paragraphs 11.4.142 – 11.4.145, **REP2-018** and **REP2-019**]. It concluded no AEoI of the site based on a prediction of collision resultant mortality to gannet attributed to the SPA of a very small number of individuals that makes no material difference to the long-term maintenance of the gannet populations of the SPA. See footnote **d**.

Regarding gannet specifically, NE stated at paragraph 6.4.29 of its WR [**REP1-113**] "*...although we have concerns that there is potentially an underestimate of collision mortality, we do not think it will change the overall conclusions that there is no significant effect either alone or in-combination*". See also footnote **g**.

[**REP4-033** and **REP5-077**] specifically confirm NE's agreement that the Proposed Development alone will not have an AEoI on the gannet population of the Flamborough and Filey Coast SPA.

- c.** Collision risk to kittiwake from the Proposed Development alone during operation was considered in the RIAA [paragraphs 11.4.146 – 11.4.149, **REP2-018** and **REP2-019**]. It concluded no AEoI of the site based on a prediction of collision resultant mortality to kittiwake attributed to the SPA of a very small number of individuals that makes no material difference to the long-term maintenance of the kittiwake populations of the SPA. See footnote **d**.

Regarding kittiwake specifically, NE stated at paragraph 6.4.31 of their WR [**REP1-113**] "*Natural England considers that the impacts from the project alone are not likely have an adverse effect on the integrity of Flamborough and Filey Coast SPA*". This position (in relation to the Proposed Development alone) was re-iterated at various points in the Examination by NE, including in the SoCGs with the Applicant [**REP4C-008** and **REP5-077**].

- d.** In their RRs, NE and RSPB expressed concerns around the Applicant's presentation of Band model 'option 2' outputs (using generic flight heights) without presentation of 'option 1' model outputs alongside (site specific flight height data) [**RR-053**, **RR-057**]. NE

and RSPB were of the view that the Offshore Renewables Joint Industry Programme (ORJIP) Bird Collision Avoidance (BCA) Study⁵ (which was conducted at Thanet offshore wind farm), were a potential source of site-specific data to inform the presentation of 'option 1' model figures. The Applicant prepared additional submissions in response to these points at [REP1-023] stating that *"For the purpose of concluding the assessment [in the ES/ RIAA], what was relied on was the Basic Band CRM Option 2 with generic flight heights...Outputs from the Basic Band CRM Option 1 with site-specific flight heights to determine the proportion of birds flying at potential collision height (PCH) were also presented [in the ES]...Due to all species only having a very small sample size (a reflection of the low density of birds in the Thanet Extension study area) these data were deemed unsuitable for impact assessment purposes..."*. NE's concerns were also summarised in its WR [paragraphs 6.4.16 – 6.4.37, REP1-113], in summary that *"it is possible that the predicted mortality from collision risk for the 5 key species are under-estimated"* by the Applicant's modelling. Regarding gannet specifically, NE stated at paragraph 6.4.29 [REP1-113] *"...although we have concerns that there is potentially an underestimate of collision mortality, we do not think it will change the overall conclusions that there is no significant effect either alone or in-combination"*.

At Deadline 3 [REP3-058] the Applicant used what it described as *"NE's more precautionary CRM input parameters"* [as presented in Table 2, REP3-058] *to produce alternate annual collision mortality rates for kittiwake and gannet* [as presented in Table 3, REP3-058].

At Deadline 4 [REP4-033], NE commented on the Applicant's Clarification Note [REP3-058] that it was misleading to state that it uses *"more precautionary"* NE parameters, as these are based on generic flight height distributions, rather than site specific flight heights. However, NE acknowledged that use of the upper range of mortality would not change the overall assessment conclusions, although advised that the higher figures are used for the assessment [REP4-033]. Notwithstanding these concerns, NE has agreed that use of its recommended input parameters for CRM would make *"no material difference"* to the overall assessment conclusions [REP5-077, Table 4].

The RIAA Addendum [REP4B-015] stated that the SEZ does not change the number of wind turbines and that there would be no change to the Applicant's existing conclusions around the assessment of collision risk as concluded in the RIAA, ie that there would be no AEoI of the Flamborough and Filey Coast SPA (alone and in-combination). NE agreed with this conclusion in section 12 [REP5-064].

⁵ https://www.carbontrust.com/media/675793/orjip-bird-collision-avoidance-study_april-2018.pdf

- e. Breeding seabird assemblage features include the species individually named above plus fulmar. Only the gannet and kittiwake populations of the Flamborough and Filey Coast SPA were considered by the Applicant in terms of AEoI from collision risk. See footnotes **b** and **c**. The conclusions around the consideration of assemblage features has not been disputed by IPs (noting that conclusions of AEoI on individual species that form part of the assemblage are not all agreed).
- f. Collision risk in-combination was considered in the RIAA (Table 12.15 and paragraphs 12.4.29, 12.4.32 and 12.4.233, [**REP2-018** and **REP2-019**]). It concluded no AEoI of the site based on a prediction of collision resultant mortality to gannet and kittiwake (as interest features and components of the breeding assemblage) that was attributed to this SPA of a very small number of individuals that makes no material contribution to an in-combination collision risk assessment of the gannet and kittiwake populations of the SPA.

As noted in footnote **d**, NE and the RSPB expressed concerns about the Applicant's collision risk methodologies in their RRs; these concerns related to both the effects of the Proposed Development alone and in-combination [**RR-053** and **RR-057**]. The Applicant responded to these points through an additional submission at Deadline 1: *'Collision Risk Modelling Parameters and Thanet Extension's Contribution to Cumulative and In-Combination Totals'* [**REP1-023**]. At Deadline 2, NE stated that it had *"recently advised the applicant that we recommend that they re-run the collision risk modelling using the Marine Scotland science stochastic collision risk modelling tool. If Option 2 is used, then the upper confidence intervals should be considered"* (Q1.1.9 of [**REP2-044**]).

At Deadline 3, in a *'Clarification Note on Collision Risk Modelling Parameters and Thanet Extension's Contribution to Cumulative and In-Combination Totals'* [**REP3-058**] the Applicant responded to the possibility of using the latest Marine Scotland "Science R-programme" to provide a revised set of outputs for assessment, but that they were of the view that *"at present this collision risk model is a beta version and it comes without assurance that no issues with its operation and outputs might be found..."*. Instead, the Applicant agreed to provide a further set of collision risk modelling outputs that accounted for variance around parameters in relation to nocturnal activity rates and avoidance rates (provided at [**REP1-023**])

Notwithstanding its concerns around the Applicant's CRM, NE has agreed that use of its recommended input parameters for CRM would make *"no material difference"* to the overall assessment conclusions [**REP5-077**, Table 4].

The Applicant submitted a further document *'Offshore Ornithology In-combination Effects Position Paper on Kittiwake and the Flamborough and Filey Coast SPA'* [**REP4-029**] at Deadline 4. In [**REP4-029**], the Applicant provided further justification to support its conclusion that the Proposed Development would not result in an AEoI in-combination; including that all projects

included within its in-combination assessment (in relation to kittiwake and Flamborough and Filey Coast SPA) and for which a project specific HRA had been undertaken by the Competent Authority, had formally concluded no AEoI alone and in-combination. In [REP4-029], the Applicant also argued that the Blyth (NaREC Demonstration) and Beatrice Demonstrator offshore wind farms would shortly be decommissioned, thereby further reducing kittiwake collision mortality in-combination totals (and offsetting the contribution from the Proposed Development).

In [REP4-033], NE welcomed the updated collision risk estimates provided by the Applicant at Deadline 3 [REP3-058]. NE also commented that it was *"misleading to state that it uses "more precautionary" NE parameters, as these are based on generic flight height distributions, rather than site specific flight heights. However, NE acknowledged that use of the upper range of mortality would not change the overall assessment conclusions, although advised that the higher figures are used for the assessment"*.

At Deadline 4C, an updated version of the Offshore Ornithology SoCG with NE was submitted [REP4C-008]. NE maintained its position that it was not possible to rule out an AEoI of the kittiwake population of the Flamborough and Filey Coast SPA from collision mortality, in-combination with other offshore wind farm projects [REP4C-008]. However, NE acknowledged that the contribution to kittiwake collision mortality from the Proposed Development *"...is likely to be small in the context of an in-combination total arising from a number of operational, consented or proposed projects, several of which are larger and/or closer to the SPA, including projects within the likely foraging range during the breeding season"* [REP4C-008]. NE's position on this matter remained unchanged in an updated version of the Offshore Ornithology SoCG, submitted at Deadline 5 [REP5-077].

At Deadline 5, the Applicant presented a table to summarise their evidence to support the conclusions of no AEoI with respect to kittiwake collision risk in-combination effects at the Flamborough and Filey Coast SPA [Table 1, REP5-016].

The Applicant re-iterates [REP5-016] that its conclusion of no AEoI alone and in-combination primarily is based on *"A lack of an appreciable contribution to the in-combination collision risk totals for FFC SPA from Thanet Extension, being 0.6-1.63 per year (depending on the level of precaution applied)"* and further that *"the imminent decommissioning of Blyth and Beatrice Demonstrator contribute approximately 0.65 (i.e. a similar contribution to that predicted for Thanet Extension)"*. The Applicant also argued that there was inherent precaution in the modelling, being based on *'as assessed'* project parameters and not the

"frequently much reduced numbers 'as built'" (with reference to a Crown Estate "headroom report"⁶ suggesting that current collision risk estimates for kittiwake are an overestimate).

The Applicant also refers [REP5-016] to a document submitted in relation to the examination of the Norfolk Vanguard DCO application⁷ which implies that even accounting for the most precautionary in-combination totals for kittiwake collision risk at the Flamborough and Filey Coast SPA (including the contribution of the Proposed Development), the evidence shows a slowing of the rate of population increase as opposed to a population decline. On this basis (ie an in-combination effect not compromising the ability of the population to continue to grow), the Applicants position remains that the Proposed Development would have no AEoI on kittiwake from collision risk in-combination [REP5-016].

At Deadline 5, NE re-iterated that it agreed with the Applicant's conclusion of no AEoI on kittiwake from collision risk for the Proposed Development alone, but that *"...it is not possible to rule out an adverse effect on integrity when the project is considered in combination with other plans and projects. Although Thanet Extension is some distance beyond the likely foraging range of kittiwake from the SPA during the breeding season, there is the potential for the proposal to make a contribution to the overall collision mortality total"* [paragraph 8.4, REP5-064]. NE also repeated [REP5-064; REP5-066] its statements within [REP4C-008] regarding the contribution of the Proposed Development being *"small in the context of an in-combination total arising from a number of operational, consented or proposed projects"*.

In [REP5-066], NE responded to the Applicant's argument (as presented in [REP4-029 and REP5-016]) that the anticipated decommissioning of the Blyth (NaREC Demonstration) and Beatrice Demonstrator offshore wind farm would *"offset"* the contribution from the Proposed Development to in-combination collision mortality. NE considered [REP5-066] that *"...there appears to be some confusion regarding the two OWFs at Blyth in REP4-029"*. NE stated that the wind turbines being decommissioned are two turbines generally known as Blyth Offshore Wind Farm - a different project to 'Blyth (NaREC Demonstration)' (as referenced in [REP4-029]) which is a permission for 15 turbines. Therefore, NE stated [REP5-066] that the predicted reduction in kittiwake collisions for Blyth (NaREC Demonstration) drawn from Table 1 of [REP4-029] will not actually arise for the foreseeable future. Consequently, NE suggested that the Applicant provided evidence to confirm what is being

⁶ MacArthur Green (2017). Estimates of Ornithological Headroom in Offshore Wind Farm Collision Mortality. The Crown Estate, London.

⁷ "Norfolk Vanguard Offshore Wind Farm Offshore Ornithology Assessment Update for Deadline 6" (10.D6.17)

<https://infrastructure.planninginspectorate.gov.uk/document/EN010079-002764>

decommissioned and what contribution it would make to the in-combination totals [REP5-066]. The Applicant had not formally responded to NE's comments on this matter at the time of publication of this RIES.

In [REP5-066], NE remained of the view that the worst case scenario 'as assessed' for the in-combination projects should continue to be considered until such time as the any remaining capacity (headroom) between the consent and the 'as built' project is 'withdrawn' (ie formalisation of 'as built' collision risk calculations are undertaken for the projects in question). NE also disagreed that there is that there is new evidence to suggest assessments are over precautionary given the *"considerable uncertainty around the current estimates of the in-combination totals"* and *"lack of agreed figures and a common method to arrive at them inevitably [leading] to confusion"* [REP5-066].

As recorded in the latest version of the Offshore Ornithology SoCG between the Applicant and NE [REP5-077], in-combination effects on the integrity of the Flamborough and Filey Coast SPA with regards kittiwake remained under discussion.

- g.** In [REP1-113] NE expressed concerns around impacts to the gannet population of the Flamborough and Filey Coast SPA, but the subsequent focus of NE's submissions to the Examination has been in respect of impacts to the kittiwake population. Consequently, the ExA asked as an action point at ISH8 [EV-047] for an updated version of the Offshore Ornithology SoCG between NE and the Applicant [REP4C-008] to reflect the level of agreement for in-combination collision risk AEoI conclusions specifically for gannet. An updated version of the SoCG was submitted at Deadline 5 [REP5-077], which explained that NE was investigating the implications of in-combination collision mortality with the proposed Norfolk Vanguard offshore wind farm (for gannet). NE intended to provide a view on AEoI of the gannet population of the Flamborough and Filey Coast SPA from collision mortality in-combination at Deadline 6 [REP5-077]. As recorded in the latest version of the Offshore Ornithology SoCG between the Applicant and NE [REP5-077], in-combination effects on the integrity of the Flamborough and Filey Coast SPA with regards gannet remained under discussion.
- h.** In-combination effects for guillemot and razorbill have not been considered in Matrix 36, page 114 of [REP2-004]. They are also not considered in section 12.4 of [REP2-018 and REP2-019], which only considers in-combination effects in terms of gannet and kittiwake from collision risk. The Applicant's approach to the assessment of in-combination effects for offshore ornithology is set out in section 8.5 of [REP2-018 and REP2-019]. These conclusions in respect of in-combination effects on guillemot and razorbill at the Flamborough and Filey Coast SPA have not been disputed by IPs during the Examination.
- i.** The Applicant has concluded no AEoI from barrier effects during operation based on based on the *"minimal effect of deviating around the site on migration that makes no material difference to the long-term maintenance of the gannet and kittiwake"*

populations of the Flamborough and Filey Coast SPA". Sections 9.10 (site summary), 11.4 and 12.4 of the RIAA (offshore ornithology alone and in-combination respectively) [**REP2-018** and **REP2-019**] make no specific reference to barrier effects, (but LSE is concluded for barrier effects on common tern and little tern in matrix 17 of [**REP2-004**]).

In response to the ExQ1 (Q1.1.16 of [**REP1-024**]) the Applicant explained that "*the significance of the barrier effect for all species assessed was 'negligible adverse'*" (paragraphs 4.1.153 – 4.1.155 of [**APP-045**]). NE's comments on the Applicants response to Q1.1.6 [**REP2-045**] agrees that the significance of barrier effects is negligible.

The conclusions of no AEoI for barrier effects (alone an in-combination) at the Flamborough and Filey Coast SPA have not been disputed by IPs during the Examination. NE's dispute of the conclusions of no AEoI does not appear to relate to these species or barrier effects [**REP5-077**].